THE INDUSTRY'S RECOGNIZED AUTHORITY

# ROCK PRODUCTS

LARGEST PRODUCER CIRCULATION IN THE HISTORY OF THE FIELD

Five Aggregate Sizes
Supplied for Big Dam page 60
Mexico Improves Cement
Quality-Plant Capacity page 64
Recover Fine Sand
from Waste Water page 101
Convention Reports In This Issue



Two dissol engines drive crushers at Noranja Rock Co., Noranja, Fia.

**MARCH 1955** 

# Crush 9t! Grind 9t Separate 9t



#### HAMMER MILLS

For heavy duty crushing or grinding of virtually any mineral or chemical—Williams builds them to do a complete job in one operation! Primary and secondary crushers are unnecessary—extra foundations, conveyors, other equipment are eliminated! You can save up to 75% on initial investment—up to 50% on grinding costs with the right Williams Hammer Mill!



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#### WILLIAMS



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WILLIAMS (S)
CRUSHERS GRINDERS SHREDDERS

OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

# Carried 18,000,000 tons ...26 years in a cement mill

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This Link-Belt \$\$-856 steel chain at a Pennsylvania cement mill was still serviceable after handling 18,000,000 tons of raw materials in 26 years. Those are Link-Belt cast buckets, too.

800 Ley bushed chain



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# PRODUCTS

THE INDUSTRY'S RECOGNIZED AUTHORITY

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#### March 1955



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#### RESEARCH REEPS B.F. Goodrich FIRST IN RUBBER

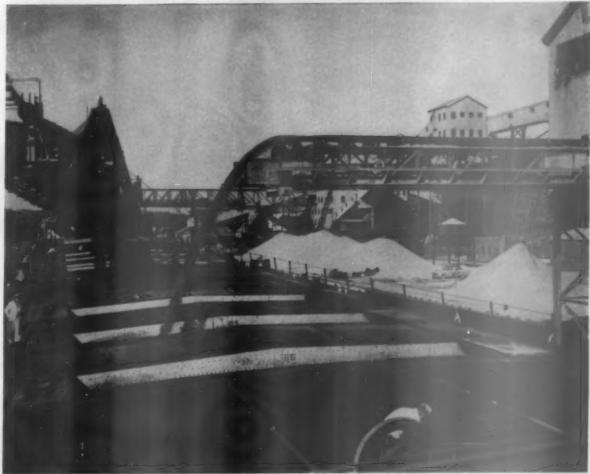


Photo courteer Construction Aggreenter Corp. Columps fel.

# A rubber gangplank for tomorrow's turnpike

#### A typical example of B. F. Goodrich improvement in rubber

THAT'S wet, sharp gravel being loaded on a ship. With millions of tons needed for new highways, gravel must be handled at low cost. A conveyor belt to shipside was the fastest and cheapest way.

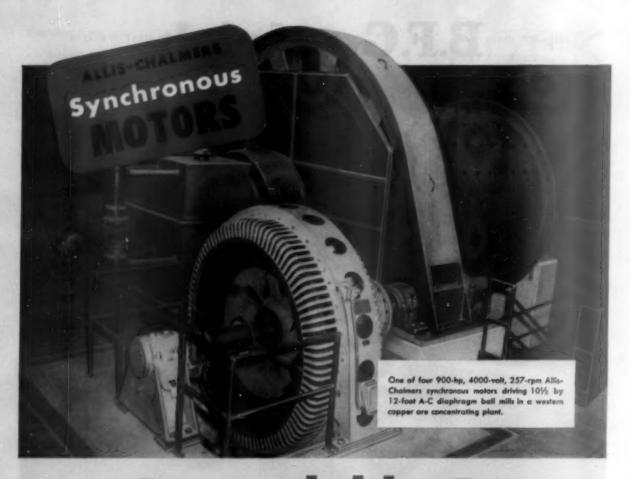
But the wearing avalanche of 2800 tons an hour dumped on the belt cut and tore the rubber cover, broke the fabric reinforcement. Then engineers suggested a B. F. Goodrich cord belt. It is built with cords, running lengthwise, held in place by rubber. When heavy loads hit this belt it "gives"—absorbs the shock instead of fighting

it. The rubber in the belt is so tough it can stand the cuts and gouges of millions of sharp edges. When this picture was taken, the B. F. Goodrich cord belt had carried more than 14 million tons, had lasted longer than any belt ever used by the company, and still looked good for years more.

Product improvement like this is always going on at B. F. Goodrich. New ways are constantly being found to make conveyor belts, V belts, hose, all sorts of products work better, last longer. No product is ever regarded as "finished" or standardized.

How this cuts your costs: Because of these improvements and because B. F. Goodrich is one company that will never lower its quality standards, you can be sure of top performance and real money savings when you specify B. F. Goodrich. To find out about the latest improvements in the rubbet products your company uses, call your B. F. Goodrich distributor of write The B. F. Goodrich Co., Dept. M-376, Akron 18, Obio.

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# Here's Dependable Power for Grinding Mills

Motor design closely coordinated with grinding mill torque requirements and system power factor needs

Many cost-conscious operators, like this western copper ore concentrating plant, choose Allis-Chalmers synchronous motors for peak performance and low maintenance costs. Allis-Chalmers builds both processing machinery and the electrical equipment to drive it. Allis-Chalmers intimate knowledge of operating conditions is full assurance that the motors

will not only meet daily operating requirements but will also handle unusual emergency conditions without faltering.

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For more information on synchronous motors that keep costs down, call your Allis-Chalmers representative or write for Bulletin 05B7648. Allis-Chalmers, Milwaukee 1, Wisconsin.

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(AC)

A4552

# IF yo take a look another machine Memphis, Tenn. in quarries all over Northwests have dozens of installate that have named wests stand up an a real Rock Shove

IF you think you have a rock problem, take a look at this job. This Northwest replaced another machine in the pit of Lewisburg Limestone Co. at Memphis, Tenn. It is another of the many ¾ yd. Northwests in quarries all over the country.

Northwests have been proved as real Rock Shovels in dozens of installations like this. It is the many quarry users that have named the Northwest a real Rock Shovel. Northwests stand up and deliver in rock digging and if you have a real Rock Shovel you never have to worry about output in any kind of digging.

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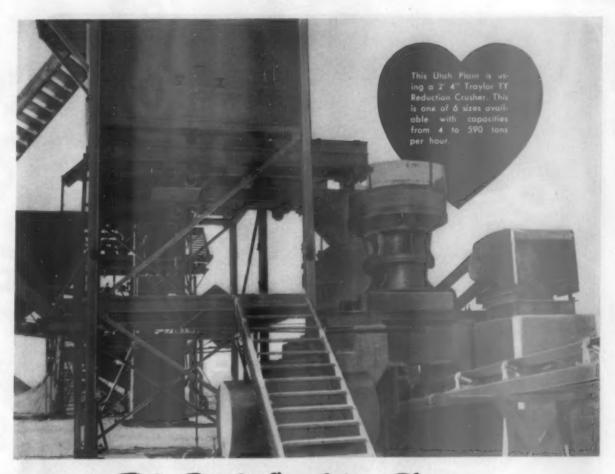
"Lower accident insurance charges. U.S. Royal's bright yellow color catches everyone's eye. It also keeps workmen from running vehicles over it or letting equipment drop on it. Result: U.S. Royal Gold lasts even longer."

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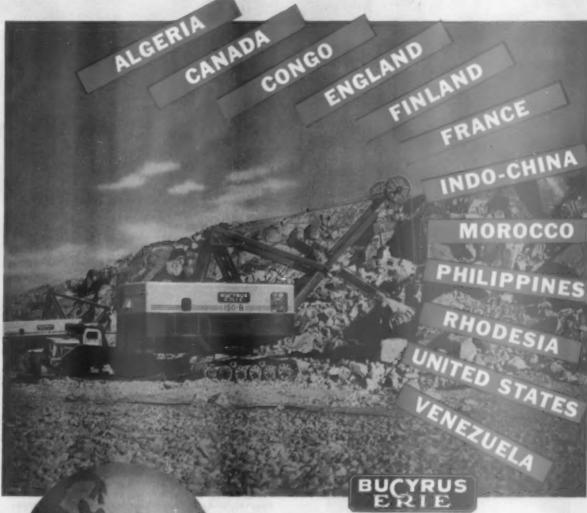
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150·B 4½ cu. yds. 150·B..6-cu. yds. 190·B..8-cu. yds.

Scores of these outstanding excavators have proven their worth in varied quarrying, mining, and heavy-duty construction projects all over the world.

Remember, FOR THAT EXTRA MARGIN—in design, in construction, in all round performance, and, above all, in output—it's BUCYRUS-ERIE Ward Leonard electric excavators.

#### **BUCYRUS-ERIE COMPANY**

South Milwaukee, Wisconsin

### 12% MORE FINER-SIZED AGGREGATE





#### HIGHER TONNAGES OF FINE-CRUSHED PRODUCTS

This new 30" x 25" Cedarapids Roll Crusher handles the same size feed as the 30" x 22" formerly used in the Commander, but its higher capacity makes it the best size to balance the great screening capacity of the Commander's big screen. This design ratio of crushers, screen and conveyors is the secret of the Commander's big-volume production at low cost per ton.

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- Large 48" x 10" Herizental Vibrating Screen gives the extra screening capacity necessary to balance the greater output of the new 30" x 25" Roll Crusher, and assures maximum screening officiency.
- 30" wide conveyers throughout the plant easily handle the increased capacity.
- glacered for minimum maintenance with socied arrings on all return rolls and troughing rolls, self-igning bearings, disc alutches, seeled crusher arrings, stress-rolloved crusher bases and screen at, free use of alloy steel, easy access for jubrication and service adjustments.

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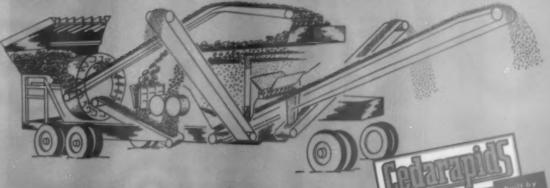
# ANNOUNCING

# ANNOUNCING BIG NEW 30"x 25" ROLL CRUSHER!

#### Increases CEDARAPIDS COMMANDER secondary crushing capacity by 12%

Here's the best answer to greatly increased output of finer sizes, or more profitable operation in pits with high percentages of fines. Now Cedarapids Commander production is even greater than the enormous tonnages turned out by the plant originally equipped with a 30" x 22" roll crusher. The roll crusher is the final sizing or metering point—12% more roll crusher capacity also means the jaw crusher can be opened larger for additional extra capacity, depending upon crusher feed size, without increasing operating or maintenance costs one cent!

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Thermoid designs and manufactures many types of hose built to give longer service and lower operating costs in a wide variety of specific applications. Here are three that are ideal for rugged quarrying and construction work:

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VERSICON — Most versatile hose ever developed. Handles air, water, oil, gasoline, dilute acids and gases. Ideal for use with air-operated tools.

#325 CL SUCTION HOSE—Heavy duty wrapped hose reinforced with rugged wire enclosed in a woven cord carcass. Long wearing tube and cover resists weather and abrasion. Can be restored to shape after crushing.

Thermoid research is responsible for new, better hose construction which makes Thermoid Hose more durable...easier to handle. Quarrying and construction work also demands the best in Conveyor Belting and Multi-V Belts. Ask your Thermoid Distributor for complete information on all these Thermoid Products. Or if you prefer, write direct.



Conveyor & Elevator Belting . Transmission Belting F.H.P. & Multiple V-Belts . Wrapped & Molded Hose



Rubber Sheet Packings - Molded Products Industrial Brake Linings and Friction Materials

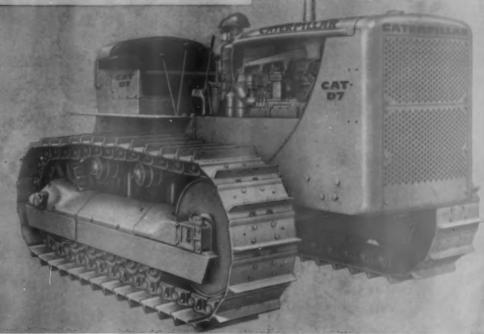
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CATERPILLAR TRACTOR CO., Poorie, Illinois

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New 128-HP Engine features improved fuel injection system, flanged center main bearing to take cranishaft thrust, many other advances.

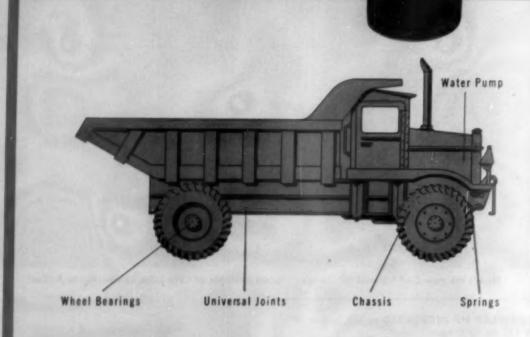
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does







#### all these lubrication jobs

Here's a lithium-base, multi-purpose grease that combines in a single product the best qualities of many greases plus exclusive properties of its own.

Gulflex A provides excellent protection for wheel bearings, springs, chassis, universal joints, water pumps, or any grease lubricated bearings. It replaces five or six different greases you may now be using, and does a better job.

Here are some of its outstanding features:

- · Resists the washing action of water.
- · Won't harden at low temperatures.
- · Performs perfectly at high temperatures.
- Will not lose consistency under extreme service.
- · Easy to apply—good pumpability.

And here's what it does for you:

- · Saves time on lubricating jobs.
- · Saves on inventory—saves on equipment.
- · Saves on space—reduces waste.
- · Reduces lubrication costs.

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#### **GULFLEX A**

the outstanding lithium-base, multi-purpose grease





THE FINEST PETROLEUM PRODUCTS FOR YOUR EVERY NEED



# ...4 tons more capacity at no extra cost

#### **Check these Improvements:**

#### 4 tons more capacity

Payload of the C Tournapull Rear-Dump has been raised from 18 to 22 tons! Increase was made possible by redesigning the Rear-Dump body to make it lower and wider. Because of this greater width, the "C", loads faster and easier than ever before. At the same time, we have reinforced the bowl to further increase our safety margins. These improvements, plus all the others described here, are available on the new "C" at no extra cost to you.

#### Better gradability, stability

New body design shifts weight forward... improves gradability over the previous C Rear-Dump. With this improvement, "C's" grade-climbing ability now compares favorably with any make hauler on any practical haul road. Wheelbase has been increased 6 in., gauge widened to 9 ft., and ground clearance lowered to 22 in. to give you even greater stability... improved performance on grades. Overall length in haul position, however, is only 30 ft.

#### 13 to 20% less deadweight

Comparable rear-dumps carry from 2½ to 4 tons of excess iron on their backs. For these extra tons of iron you pay from \$850 to \$5600 more than for a "C". You haul this extra dead-weight both ways on every trip your hauler makes, but add nothing to your earnings. For the life of the machine it costs you bigger fuel bills, higher tire costs due to over-loading, plus greater repair expense because of extra weight and shock on running gear.







"C" Rear-Dump now 22 tons

12% greater horsepower

To power your improved "C" Rear-Dump, you now have a 6-cylinder GM 6-71 diesel with brake horsepower rating of 208 hp at 2000 rpm. With this improved engine, you get quick pickup in starting and gear changes... better response at high speeds... better grade-climbing ability... all adding up to overall faster cycles. 200 hp Buda or Cummins diesels are also available. And, you have choice of sliding-gear or constant-mesh transmissions.



In addition to many improvements in structure and machinery throughout, you get all these job-proved basic features which made the provious C Rear-Dump a successful production units

Houls onywhere — With big rubber tires, Rear-Dump safely travels narrow haul roads, paved highways, city streets . . hauls cross-country over roughest terrain, through mud, and soft fills.

Reduces maintenance—Because Rear-Dump has no hydraulics, no jack lines, no long drive-shaft, no frame, sub-frame, springs or tie rods, most common troubles of conventional rear-dump haulers are eliminated.

Dumps fast, clean — A touch of a switch activates hoist motor. Body lifts quickly, swings behind rear wheels to dump clean over bank. Streamlined bowl sheds material readily.

Cuts weather delays — Power transfer differential automatically applies power to drive wheel on firmest footing . . . pulls unit through mud, sand, and soft materials which stop ordinary haulers. It's a Tournapull exclusive.

Works fast in tight quarters — 90° turns within a radius of half of unit's length, plus power steer, quickly position "big-target" body under dipper. No switching back and forth, no turntables.

Eliminates manual work — Finger-tip electric controls on instrument panel activate electric motors at point of action. Heavy manual work fighting steering and control levers is eliminated.

Resists body shock, damage — Three-layer, all-steel, grid-type bowl with tool-steel floor resists loading shocks. Big, wide bowl opening is an easy target for any loading unit.

Improves safety — Multi-disc air brakes have more breaking surface on one wheel than most haulers have on 4. Low center of gravity, good visibility, frontwheel drive, easy control also boost safety.

Delivers full power — Torque converter (optional) automatically balances load and torque so you get full hp always. Lugging is reduced; shocks between engine and transmission virtually eliminated.

Reduces for ligure — Big low-pressure tires and air-foam rubber cushion seat smooth out ride for operator. Push-buttons control every action. Fatigue factors are greatly reduced.

Insures future earnings—Behind Tournapull prime-mover, you can interchange scraper, bottom-dump, other trailing units. With them, you always keep these units profitably busy on any type of future operation.

Check for yourself. Your Le-Tourneau-Westinghouse Distributor will supply you with names of Tournapull Rear-Dump owners in your area. Visit the jobs . . . talk to the operators . . . learn for yourself that improved C Tournapull Rear-Dump is the answer to your hauling problem.

There is a size to fit your needs. Besides the 22-ton "C", LeTour-neau-Westinghouse offers similar 9, 35, and 50-ton models.

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#### What's Happening

#### IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

March, 1955

- Plastics are expected to make extensive inroads into the building materials field, according to the Architectural Forum, the most probable new building use being lightweight plastic curtain walls. Foamed plastic insulation boards and reinforced plastic structural members are now in use, but "lightweight curtain walls promise to be the plastic industry's biggest contribution to building construction." The combination of high strength/weight ratio with good insulating and moisture-resisting values for plastics is said to permit its use in load-bearing structural panels for light frameless structures. However, plastic panels cannot pass code fire tests, thus providing little competition with masonry in multi-story construction.
- Magnesium corrosion resistance is reported to have increased from 300 to 400 percent, through an impregnating process known a "Magseal." The process, developed by Nu-Lite Plastic Impregnating Co. of Los Angeles, Calif., is a resin combination that impregnates the metal in a similar manner as conventional impregnation, yet is said to provide greater protection in the critical areas where dissimilar metals contact the magnesium. Processed samples of the metal were subjected to continuous salt spray for periods up to 125 hr. with no evidence of pitting or metal failure. The process may be a step toward furthering the use of magnesium sheets and castings in modern industrial design and production.
- Heavy Construction awards, nationally, totaled \$1,575,171,000 for the first five weeks of 1955, the second highest on record, and 64 percent above the low \$960,620,000 total for the first five weeks of 1954, as reported by Engineering News-Record. Private awards totaled \$989 million for the first five weeks, up 112 percent over 1954, and federal contracts totaled \$194 million, twice the volume in the same period of last year. State and municipal contracts are holding close to a year ago with \$383 million, off 1 percent from 1954.
- Percentage depletion allowances do not meet actual depletion costs for the oil companies, according to Union Oil Co. of California. The firm, like other oil producers, is permitted 27½ percent deduction of the gross income received from its oil-producing properties. Company officials claim the total cost of unproductive exploration exceeded the amount recovered through depletion. These costs included dry holes that were drilled, land that was leased and abandoned, and the cost of geological and geophysical work that produced nothing.
- Lehigh Portland Cement Co. of Allentown, Penn., has contributed an additional \$5000 above its original \$20,000 scholarship fund to Princeton University. The endowment will help make up the difference between the tuition which the university receives from the company's scholarship endowment and what the university actually spends to educate a student. The scholarship is awarded to a different undergraduate each year, or may be awarded to the same student for more than a year.

- Construction contract awards, in the 37 states east of the Rockies, totaled \$19,770,207,000 for 1954, an increase of 13 percent over the previous record set in 1953, according to an F. W. Dodge Corp. report. Non-residential awards of \$7,110,348,000 were up 2 percent over 1953, and residential awards of \$8,518,291,000 were up 31 percent. Public works and utilities, with a total of \$4,141,568,000 were up 3 percent. Total awards for 1954 showed a gain each month over the total for the same month of 1953, except April which was down 3 percent. Awards for the month of December, 1954, were reported at \$1,828,837,000, 22 percent over November and 41 percent higher than the figure for December, 1953. The December, 1954, total was one of the highest monthly totals recorded, despite the traditionally slack period attributed to the winter months. Non-residential awards in December, amounted to \$701,427,000, up 43 percent from November, and 30 percent over December, 1953; residential awards of \$761,577,000, were up 7 percent over November and up 76 percent over December, 1953; public works and utilities totaling \$365,833,000, were up 22 percent over November and 13 percent over December, 1953.
- A unique method of estimating tonnage in storage piles was recently introduced at ten of Philadelphia Electric Co.'s coal storage sites. Aerial surveyors took three-dimensional photographs of the coal stockpiles and translated them into contour maps of one-foot intervals. Each one-foot level of the coal pile was measured on the maps and its volume computed, thus cutting weeks of work to days.
- Uranium and thorium bearing phosphate beds may have been found in South Carolina, Georgia and Florida, as the result of a recent airborne search conducted by the Interior Department's geological survey for the Atomic Energy Commission. The areas have not been investigated thoroughly, and a survey may lead more to discovery of phosphate beds rather than to deposits of uranium and thorium, according to survey officials.
- The first industrial plant in the Chicago area, using only prestressed and precast concrete construction, is being built for For-O-Scope, Inc., by Palmieri Engineering Co. Two 700-ft. bow arches run the length of the 50,000-sq. ft. building, and the roof and floor girders are to be suspended from vertical hangers. Roof and floor slabs and wall panels are to be of precast concrete.
- One of the largest building projects in the world, using prestressed concrete, is underway in Seattle, Wash., on a building to house Boeing Airplane Co.'s materials handling operations. The 458- x 600-ft. building will use approximately 152 prestressed concrete girders, 44 ft. in length, and 374 beams, 40 ft. in length. It will have 290,000 sq. ft. of floor area.
- The City of Atlanta has abandoned its stone quarry which has been operating for 24 years. The city claims it can now buy stone needed for street repairs cheaper than it can quarry it, even though it uses the "free" labor of city convicts in its quarrying operations.
- Dumortierite, a rare mineral used in spark plugs and other refractory products, has been discovered in a deposit north of Basin, Mont., according to the Interior Department.

# Caterpillar announces A NEW LINE OF





#### TORQUE CONVERTER POWER UNITS

#### WIDE CHOICE OF POWER UNITS

Engine and torque converter

Engine, clutch and torque converter

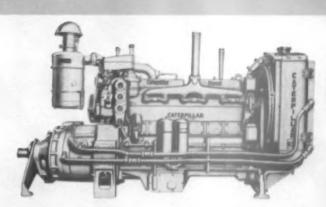
Engine, clutch, torque converter and reverse gear

#### WIDE CHOICE OF OUTPUT SHAFTS

Standard heavy-duty drive for side loads Narrow chain housing for side loads Wide chain housing for side loads Output shaft for in-line loads only

#### First Facts About CAT\* Tarque Convertor Power Units

- 1. Torque output is automatically matched to the load.
- 2. Loads start smoothly.
- 3. Load movement can be controlled without using the clutch.
- 4. Overleads cannot kill the engine.
- Need no special hydraulis oil—their fluid is engine fuel—fluid level automatically maintained.
- Cat Diesel Engine burns non-promium fuels cleanly and efficiently, even when idling.
- 7. Caterpillar can supply your torque converter requirements from stock.
- 8. Caterpillar Dealers have facilities and parts for servicing torque converters.



Now, to provide you with a greater selection of power packages, Caterpillar offers a new line of torque converter units. As many as twelve different torque converter arrangements are available for each of six Cat Engines, up to 480 HP. Whatever your power needs in excavators, hoists and locomotives, you'll find the right unit in Caterpillar's complete line.

In offering torque converter power, Caterpillar has combined extensive research with years of practical application in the field. Here are owners' reports of units on actual jobs: "Live and snappy with plenty of power"..."We get an abundance of power out of these torque converter power units"... "Always ready to go."

Either as original or replacement power, it will pay you to check the advantages of torque-converter-equipped Cat Diesels, Each is matched to do more work at lower cost with less down time than any competitive unit, Leading manufacturers of mining machinery can supply these money-makers in the equipment they build.

For complete details about these production boosters, see your Caterpillar Dealer. He has the experience and technical knowledge to help you with your power problems. He has trained personnel who know how to install engines and torque converter power units in mining machinery. Call him today!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

#### CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U.S.A.

Please send me further information on Cat Diesel Torque Converter Power Units

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Company\_\_\_\_

Street

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#### CATERPILLAR'





#### Driver's left hand rests on power-shift levers-there's no clutch pedal

## You'll cut your loading time!

# with the MICHIGAN Power-Shift Transmission

Here's the secret of BIG TIME-SAVINGS:

the MICHIGAN Power-Shift Transmisolant Porward-Reverse and Night-Lowgears are in consteat mesh, Shifting is accomplished by hydraulic pressure. The power-shift levers on the steering calumn actuals control valves in the transmission. Those valves direct all pressure to the multiple disc-clutches, transmit engine power from the polected drive goers to the autput shaft. Hydraulic all completely Jubricates all drive goers and bearings as it flows from top to bottom and returns to the sump through a fine-mash screen. Operating a MICHIGAN Tractor Shovel is both fast and easy. Gone is the old-fashioned heavy duty foot clutch; gone is the tiresome work of clutching every time you shift gears.

The MICHIGAN Power-Shift Transmission does all the work for you. All you do is operate the fingertip hand levers on the steering column . . . one for Forward-Reverse, the other for High-Low speed. Make either shift while moving in either direction without coming to a stop.

The MICHIGAN'S power-shift transmission speeds up operation, cuts loading time, gets you TOP YARD-AGE per day.

Get a demonstration right on your own job. It is easily arranged: just phone your MICHIGAN distributor. Did you know MICHIGAN Tractor Shovels are available under the Clark Leasing Plan? We would be glad to send you full details.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY Construction Machinery Division 452 Second St., Benton Harbor 25, Michigan

# Another NEW Plant Chooses SECO VIBRATING SCREENS



Lorge photograph shows screens in partially constructed new plant of Holmes Construction Co., Wooster, Ohio

#### ONE USER TELLS ANOTHER . . . "SECO GIVES BETTER, SMOOTHER SCREENING"

Here's another new sand and gravel operation getting off on the right foot with SECO vibrating screens exclusively. The two SECO vibrating screens shown above were chosen by Holmes Construction Company to handle all screening in this new plant at Wooster, Ohio.

The choice of SECO screens in so many new plants today is influenced by recommendations of other satisfied SECO users. One owner tells another . . . you can't beat SECO for performance.

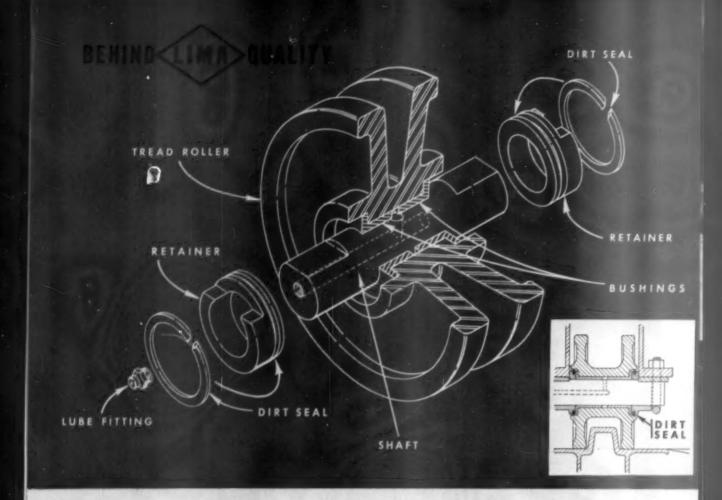
Planning a new plant or expansion of your present operation? . . . you'll cut operational costs with SECO's.

SEND FOR CATALOG NO. 204 TODAY!

# SECO TRUE CIRCULAR ACTION VIBRATING SCREENS

Let SECO screening experts help you plan your plant for efficient low cost screening . . . Write, wire, phone

SCREEN EQUIPMENT CO., INC.
Buffalo 25, N. Y.



#### LIMA dirt seals cut down-time and maintenance costs

Effective piston-ring-type dirt seals in the tread rollers are another quality "extra" you get when you use a LIMA. Abrasive material which wears out the bushings and shafts of ordinary machines is excluded. LIMA seals the lubricant in and dirt out to reduce friction and prolong the life of bushing, roller and shaft.

COMPARE QUALITY! No other machine gives you as much as LIMA!

- 1. Piston-ring-type dirt seal rings and retainers.
- Moving parts are flame or induction hardened for longer life.

- Main machinery is placed well back of the center of rotation.
- 4. Anti-friction bearings at all important bearing points.
- 5. Big capacity drums and sheaves.
- Propel and swing gears and power take-off are enclosed in a sealed oil bath.
- 7. Torque converter (optional).
- Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts.

The features listed above contribute to LIMA'S greater output with less down time and lower maintenance costs. Users agree! It costs less to own a LIMA!

This LIMA demonstrates the importance of LIMA'S dirt seals and grease retainers.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD





LIMA SHOVELS - CRANES - DRAGLINES - PULLSHOVELS

BALDWIN - LIMA - HAMILTON

Construction Equipment Division . LIMA . OHIO . U. S. A.

ALLIS-CHALMERS
Air-Quenching
COOLER

# FIND OUT—How Many Ways This Cooler Can Cut Costs for You!

SAVE ON INSTALLATION

You save up to 30% on installation costs over comparable coolers. Pre-tested and pre-assembled, your cooler is shipped to your site in two sections where it is easily installed without costly revamping of plant. Less headroom is required — there are fewer costly auxiliaries.

SAVE ON FUEL Movable baffle in air housing above clinker bed isolates and directs hottest air to kiln. Combustion efficiency is greatly increased.

SAVE ON POWER

Uniform bed of material passing over grating requires only low pressure air. Comparatively smaller fan and motor uses only about ½ hp-hr per barrel of clinker. Fewer auxiliaries to drive.

SAVE ON MAINTENANCE
Simplified design and small number of parts require little attention. Low upkeep cost. Lubrication is required only on drive mechanism. Only four grease fittings. Horizontal grate system insures smooth flowing bed of material and high efficiency cooling throughout. There is little or no wear on grates or grate warpage. Maintenance is only about 1/10 cent per barrel of clinker.

#### SEND FOR NEW HANDBOOK ON

Air-Quenching Coolers

Contains valuable engineering information on cooling that can hole make your approxions more profitable! It's a book you'll want to

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# TELSMITH Equipment

from Crushers to Bin Gates



#### SMITH ENGINEERING WORKS

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Representatives in Principal Cities in All Parts of the World

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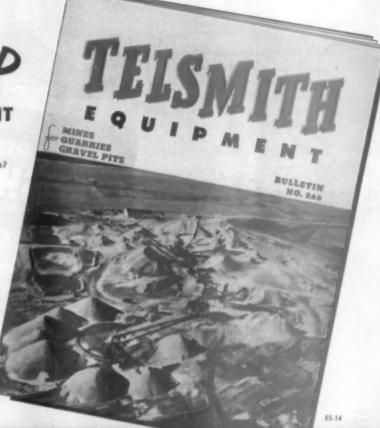
# GET THIS CHECK-UP

#### ON YOUR EQUIPMENT

Is your plant, and particularly its equipment so designed and built that it meets all your deposit and market needs? Is capacity high... and upkeep low? Does it pay the profits it should for the money you have invested? These are the equipment facts you're looking for. You'll find them in this guide. All the latest data on the newest equipment—Telsmith-engineered, modern, flexible, and the right type, model and size to turn out quality aggregate in quantity, at low cost.

#### Consult TELSMITH Engineers

let them relieve you of technical detail in plant planning and equipment selection.





EQUIPMENT GUIDE No. 266

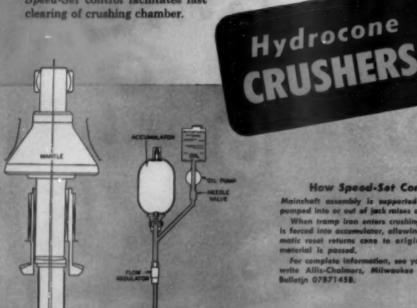
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#### Speed-Set Hydraulic Adjustment Affords One Man... One Minute **Product Control**

Quick, Accurate Product Size Adjustment - No dismantling and no auxiliary equipment are required to change from one product size to another. Changing is instantaneous and precise with Speed-Set control.

Simplified Compensation for Wear-Compensating for wear on concaves and mantle is equally as fast and convenient, A push of a button on large Hydrocone crushers or a move of the hand control on smaller sizes does the job.

**Fast Emergency Unloading** and Tramp Iron Protection - If crusher stops abruptly because of power failure or other emergency, Speed-Set control facilitates fast clearing of crushing chamber.



#### How Speed-Set Control Works

nbly is supported an hydraulic lack, Oli out of jack raises or lowers crushing montle.

Than tramp iron enters crushing chember, all from jack ercod into accumulator, allowing mantle to lower. Auto-ic reset returns come to original setting after tramp

**ALLIS-CHALMER** 





## LIGHT, RUGGED AMSCO® DIPPERS deliver more loads per shift

The all-cast Amsco dipper is made of the toughest steel known . . . manganese steel. Amsco dippers withstand rough handling, sharp impact and grating abrasion because of this same sturdy construction. And all dipper segments are plug-welded together, adding strength without increasing weight.

Notice the raked design . . . those sharp, fanned teeth bite out a capacity load every time. Dumping is instantaneous, because the

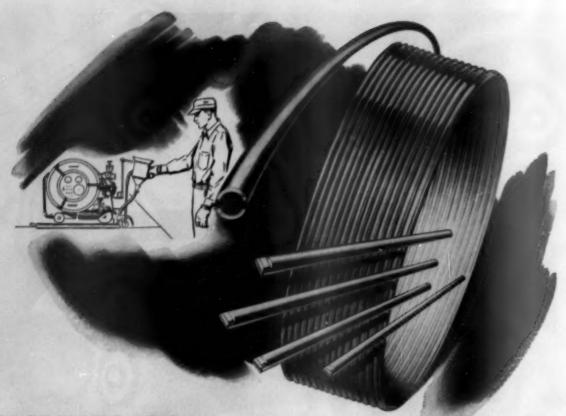
dipper bottom has a larger opening than its top. And there are no snagging edges or cavities on the interior to collect clods and lower loading capacity.

Specify these light, rugged, Amsco dippers to get more bite and higher loading into the working end of your dipper sticks. You'll get more digging done in less time at no increase in power load. Specify Amsco manganese steel, too, for other parts that must be extra tough.



AMERICAN MANGANESE STEEL DIVISION

Chicago Heights, III.



# HAYNES 90 alloy now available in tubes and at a MUCH LOWER PRICE

Now you can save even more by hard-facing wearing-parts with HAYNES 90 alloy. This is because HAYNES 90 costs so much less in this new economical tube form. These new tube rods produce sound, uniform deposits that won't crumble or flake off at temperatures up to  $1000^{\circ}\text{F}$ . They provide the same high abrasion, impact, and corrosion resistance—the same dependable protection for your equipment that HAYNES 90 brought to you as a cast rod—and at a much lower price.

For manual hard-facing, HAYNES 90 tube rod comes in convenient 14-in. lengths for easy application with standard metallic-arc welding equipment. For rapid coating of large parts, HAYNES 90 also comes in coils for mechanized hard-facing by the submerged-arc, inert gas, and open-arc methods.

HAYNES 93, HASCROME, and HAYSTELLITE alloys are also available in this economical tube rod form. HAYNES 93 iron-base rod is noted for high abrasion and corrosion resistance . . . HASCROME iron-base rod for high impact resistance . . . and HAYSTELLITE tungsten carbide rod is tops for resistance to severe abrasion.

Your local dealer carries a complete line of HAYNES hard-facing rods. Contact him for complete details. If you don't know the location of your local dealer, write to Haynes Stellite Company, a Division of Union Carbide and Carbon Corporation, Kokomo, Indiana.

See... Your local Haynes Stellite Dealer
Write... to Haynes Stellite Company

"Haynes," "Haycrome," "Haystellite," are registered trade-marks of Union Carbide and Carbon Corporation.

PATCH roads, streets, and runways the most economical way.

PATCH with permanent hot mix.

PATCH in all seasons with dried, heated aggregate.

PATCH with the machine that produces all mixes (including low slump concrete).

PATCH with the mixes produced on the job site or in a convenient central location.

Only the Mixall has . . . Rotary-drum dryer . . . Twin-shaft pugmill . . . Drying and mixing, independently controlled . . . Low charging skip . . . High discharge.



Let us show you how the Mixall can reduce your costs.

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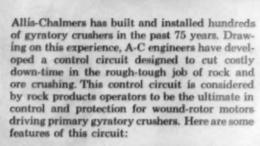
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#### CUT CRUSHER DOWN-TIME

th Custom-Engineered

ALLIS-CHALMERS

CONTROL



Motor Overload Protection — Two separate sets of thermal overload relays are provided. One set operates on slightest overload to sound remote alarm horn and energize indicating light. These relays do not stop motor. If warnings are not heeded, a second set of relays stops motor when temperature reaches danger point,

Maximum Torque Starting — Control is arranged so that maximum torque can be obtained at any time while motor is being started. Frequently, application of maximum torque permits starting a stalled crusher and clearing jam.

Jog-Reversing Controller permits rocking to clear jam.

Time-Delay Undervoltage Relay allows crusher to ride through momentary voltage dips.

Stail Protection — On currents greater than normal load peaks, the motor is disconnected through an instantaneous current relay.

Type It high voltage starter custom-engineered to central and protect wound-rotor motors driving primary gyrotory crushers.



Write for details. Explanatory material is yours for the asking. See your A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4525

**ALLIS-CHALMERS** 



Down went the overhanging rocks ... and the cost of getting them down!

REMINGTON
ANDUSTRIAL GUN
Cuts \*85° job to
\*95° at quarry

"It used to cost us about \$85 each time we had to remove overhanging rocks from our quarry—now with a Remington Industrial Gun we do the whole job for \$9.50." That's the report from a zinc mine in Alabama.

Savings like this are common. The Remington Industrial Gun saves hours of hazardous work...can be aimed, loaded and fired in seconds. Mount it on a truck, a tripod or a mobile chassis. Set it up in any part of your mine or quarry. You'll find real versatility in this fast, safe way of removing obstructions. The U.S. Bureau of Mines, for example, has used it for dislodging large icicles at distances up to 200 yards!

BEST WAY TO REMOVE KILN RINGS, TOO. A few well-placed shots with the Remington Industrial Gun loosen rings, cause them to full when kiln is rotated. Minimum downtime! Big gains in production!

mashing power. They're loaded with a powerful 3-ounce lead projectile that develops 7,476 foot-pounds' muzzle energy.

#### SEND COUPON FOR FREE FOLDER .....

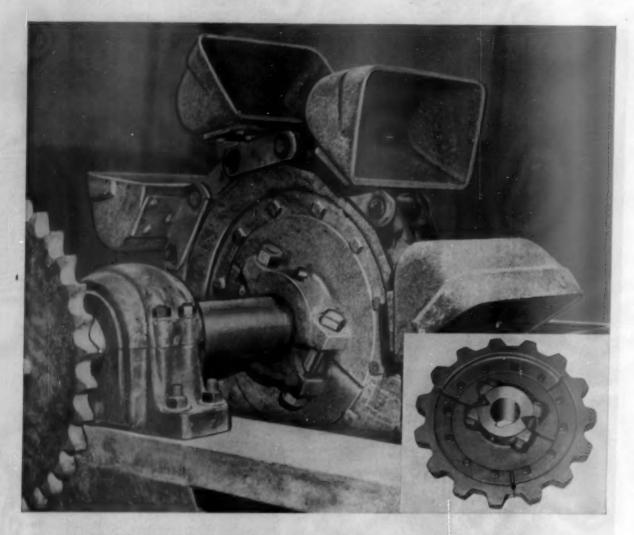
Industrial Sales Division RP-3 Remington Arms Company, Inc. 939 Barnum Ave., Bridgeport 2, Conn.

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Firm\_\_\_\_\_\_Address\_\_\_\_\_

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"If it's Remington\_It's Right!"



# DOWN Time Goes Down with Rex Segmental Sprockets



For all your slavator bucket needs, call your Chain Belt Man or Distributor. A complete range of types and sizes.



For severe elevator service, Rex Chabelco® S-856 and S-858 Steel Chains will outlast any other chain. A complete range of chains and sprockets are also available. With new Rex Segmental Sprockets and Traction Wheels, you can turn down time into productive time. It's this easy!

With this new idea in sprockets, you drastically reduce maintenance and down time. The sprocket hubs are split and the sprocket rim is bolted to it. You just slip the split hub around the shaft... tighten it...bolt on the rim. No need to remove bearings...shafts...or take down the chain. You're ready to run hours faster. Think of the saving in

down time...in maintenance time. These sprockets virtually pay for themselves in savings.

When, after long, hard service, wear takes place on the rim sections, you just remove the rims and install new ones... you don't even have to remove chain from sprockets.

Write for your complete cost-cutting information on Rex® Segmental Sprockets and Traction Wheels. CHAIN Belt Company, 4649 W. Greenfield Avenue, Milwaukee 1, Wisconsin.

# CHAIN BELT COMPANY

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# FACING A TOUGH PROPOSITION?

you can beat it
with JALLOY

JALLOY HEAT-TREATED STEEL PLATE BEATS
WEAR DUE TO IMPACT AND ABRASION



Jalley Plates outlest other steels by margins of 4 to 1



Jailey Aprens in Tyrock screen last 3 times as long as other steek



Jalley lowers maintenance costs on ore and coal conveyors



Jelley provides longer wear with less repair in truck hadies

Jalloy Heat-Treated Plate is the special purpose steel that is heat treated to provide longer wear on applications where impact and abrasive conditions are severe.

In comparison with other abrasion-resistant steels as well as mild steels, it gives optimum results when heat treated, to a Brinell hardness of 340 and up. Jalloy permits savings in steel costs, maintenance, and repair. Furthermore, it is easily welded.

Jalloy is available in three grades—1, 2, and 3 to meet various service requirements.



Jones 4 Laughlin



Complete data concerning CHEMICAL COMPOSITION . . . HEAT TREATMENT . . . WELDABILITY . . . PHYSICAL PROPERTIES . . will be mailed to you promptly. Write today,

	Dept. 481, Pittsburgh 30, Pa. ete data concerning Jalloy. representative call.
Name	Title
Company	
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For the world's happiest shovel owners and operators:



# **Electronic Control**

Step into the new "production office" of the P&H Model Electric Shovels. Look at the control station. Can you imagine anything simpler?

What you can't imagine is the difference it makes with all operating motions electronically controlled. Response is faster, performance characteristics are improved. There's better co-ordination for the operator - and a total absence of physical effort. The new advantages made possible with complete electronic control account for up to 10% more production. And that means lower tonnage costs, of course.

P&H Electronic Control is dependable, thoroughly proved in the field. It now becomes standard on all P&H Electric Shovels - another example of the way P&H leads the field in Electric Shovel developments.



P&H Model 1800 Electric Shovel - 8 cubic yard machine

P.H ELECTRIC SHOVEL DIVISION

CORPORATION

WISCONSIN





















# now—the logs are lighter with MUSCLES OF STEEL

Gone are the days when muscles of man and beast were the only means of loading and hauling big timber out of the woods. Supplying present-day lumber needs is a job that would lick ten thousand Samsons.

It's a job that demands muscles of steel—rugged wire rope that lifts and pulls the heaviest logs with strength to spare.

We of Wickwire play a big part infurnishing these muscles of steel to American industry. Wherever wire rope is used—timbering, drilling, construction, mining, fishing, materials handling—there also you'll find Wickwire Rope helping to do a better, more efficient job. That's the reason for the quality and extra care that go into its making.

every industry benefits from wire rope

#### WICKWIRE ROPE

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION THE COLORADO PUEL AND IRON CORPORATION

CHI PRODUCT

2535

THE COLUMNOR (23), AND HOME CONTURNITY—Abstract (1965) - prompt in direction - Ordering (1962) - Photograph to late City in India
PACIFIC COAST DIVISION—Los Angales - Outlined + Portland - Son Francisco + Secribic - Spalming
WICKWISE SPECIA STREE DIVISION—Leston - Duffale - Chattamongs - Chicago - Other & Enterior Fall - Raw Orleans - New York - Palabolic

# MEET "BIG BROTHER"



.. the New JOY

SUPER HEAVYWEIGHT...

# CHAMPION BLASTHOLE DRILL

Here is the new, larger, heavier Joy Champion Rotary Blasthole Drill...the "big brother" of the Middleweight and Heavyweight Champions, the Joy drills which pioneered revolutionary rotary-air blast drilling. It is designed specifically for large (9" to 12") hole-drilling in harder rock.

Proof of its ability to tackle the toughest open cut mining and quarry jobs is the record of the unit illustrated. This Super Heavyweight has been performing very satisfactorily in the hard taconite formations of the Minnesota Iron Range.

The Super Heavyweight is a rugged, heavy duty, low maintenance machine, built to last and produce. Write, now, for complete details to Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada:

Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario



DRILLS DRY . . . No freezing water lines, no costly water hauling.

NO LOST HOLES . . . Rigid drilling stem, controllable feed pressure, infinitely variable rotation speed prevent bit wander.

QUICK SETUP . . . Hydraulically raised mast and hydraulic levelling jacks.

DRILLS CLEAN . . . Continuous, instant removal of cuttings by a blast of compressed air.

HYDRAULIC CHUCK . . . Full automatic and self-aligning.

AMPLE WEIGHT . . . Enough to handle big 9" to 12" holes.



# Consult a Joy Engineer

for AIR COMPRESSORS + ROCK DRILLS + WAGON DRILLS CORE DRILLS + BLASTHOLE DRILLS + PORTABLE MOISTS FARS + BLOWERS + HYDRAULIC MOSE AND COUPLINGS





# AMSCO® PUMP DELIVERS 150,000 TONS of AGGREGATE ... before water end part renewal



Herman Clouse, Superintendent of Lincoln Sand & Gravel Company, tells the facts about his 30-year-old Amsco pump.

This 10-inch pump dredges sand and gravel from two different deposits. One is a 30% sand, 70% gravel mix. The other is about 70% sand, 30% gravel.

Water end parts last three to four months, during which the pump delivers approximately 150,000 tons of aggregate. End parts are replaced after that time, and the parts removed are re-

End parts are replaced after that time, and the parts removed are rebuilt with Amsco welding rod. Then, they're used again before being scrapped. Down time for replacement is only about three hours.

And Mr. Clouse adds that the bearings on this veteran pump have been replaced only once in the last eight years.

In 1953, when Lincoln's operations were moved farther out into the lake, a second 10-inch Amsco pump was installed as a booster. Including the extension, the pipeline is now 1800 feet long... single stage ... with a 35 to 38-foot lift.

#### QUICK FACTS ABOUT AMSCO PUMPS

Water end parts, cast of tough manganese steel and other special alloys, give Amsco pumps extra resistance to the impact and abrasion of aggregate.

Encasing the shaft in the packing area is a heavy, corrosion and abrasion-resistant sleeve. The deep-grooved, two directional thrust ball bearings are oversized to operate smoothly under strain, and to withstand long service.

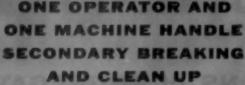
Standard sizes range from 6" to 20" discharge openings. Larger sizes are also available.

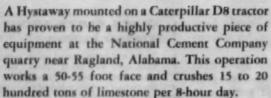
Write for Bulletin No. 1052P which includes specifications and additional information on the Amsco line of pumps.



AMERICAN MANGANESE STEEL DIVISION Chicago Heights, III.







Hystaway combines crane and bulldozer in one machine, which means that one operator and one machine are doing a job that usually requires two separate machines (crane and tractor).

Using a 4,800-lb ball on a 30-foot boom, Hystaway performs all of the secondary breaking plus clean-up work—keeps productive all day—every day.

Handy machine for maintenance work—able to travel at tractor speeds, the Hystaway can be rapidly moved around to handle small jobs such as lifting screens and motors on crusher repairs, building and maintaining haul roads.

Quickly convertible to dragline, shovel, back-



hoe, clamshell, pile driver, Hystaway can be mounted fast — without alteration or special equipment—on Caterpillar D6, D7, D8 tractors.

If you are now using two separate machines (crane and bulldozer) to handle secondary breaking and clean-up, it will pay you to investigate the savings in operating costs made possible by the Hystaway-Tractor combination.

See your Caterpillar-Hyster dealer for details, or write direct to Hyster Company, 2918 N. E. Clackamas Street, Portland, Oregon, 1018 Myers Street, Danville, Illinois.

#### HYSTER COMPANY



#### Public Relations Stressed by Aggregates Industries

THE NEED for a well-planned public relations campaign was a topic given consideration at all the national conventions of the aggregates industries this winter. Each of the major associations has now established a public relations committee to undertake a program of activities to meet a challenge that is threatening the very existence of many producers.

This past year, the impact of controlling and restrictive legislation enacted by civic and county planning commissions, and the restrictions through zoning laws, have affected more producers than ever before. At the rate that population is growing and areas are building up around the large cities and smaller communities there is no question but what the very right to operate plants is being

seriously challenged.

We have reached the stage of rationing the use of land for specific purposes in many sections, and there will be lots more of it. And the problem is being aggravated by small organized pressure groups exerting their influence on planning commissions. Their efforts are most fruitful where producers have failed to clean up their operations and to reclaim exhausted excavations. Had producers assumed these civic responsibilities, in many cases they would not now be faced with crippling restrictions.

#### **Producers Recognize Responsibility**

Because of the very nature and location of their deposits, sand and gravel producers have been most seriously affected among the aggregates industries. They have been warned of impending restrictions for many years through their national association, and those who have heeded the warning and taken recommended corrective steps have fared better than those who falsely assumed an

attitude that it "can't happen to me."

A very healthful sign was evident at the recent national conventions, in that producers have exhibited a desire to accept responsibility and take action to improve relations with their neighbors. They want to regulate their own operations not only to protect themselves from complaints by neighbors but to protect their neighbors from unnecessary faulty practices stemming from their own operations. In their desire to improve neighbor-relations there is growing interest in participating in discussions of land use and zoning, which is to the public interest in order that producers may continue to produce a valuable product and support their communities by payrolls and taxes.

Within our major metropolitan areas, conditions parallel somewhat the situation over the whole of Great Britain. There, the organized aggregates industry took action shortly after the

war to see to it that certain areas were set aside as available for sand and gravel operations. Those responsible for the planning of land use were made the object of an educational program so that they would have a thorough understanding of the essentiality of the industry and its problems. The results were gratifying where, otherwise, conditions no doubt would have been crippling to the industry in a country that is so densely populated.

Land reclaiming to restore its appearance and to return it to useful purpose is essential in Great Britain. We must have more of that in the United States on a voluntary basis or it surely will be-

come compulsory.

#### **Land Rehabilitation**

In a paper presented at the Miami convention of the National Sand and Gravel Association, F. D. Coppock, founder of the American Aggregates Corp., discussed his company's program of land rehabilitation which started more than twenty years ago. Very early in the game, Mr. Coppock assumed it as an obligation to the public to make over worked-out areas into attractive land that would add to rather than damage neighboring properties.

Much of his company's overall program is done purely for the satisfaction of having made desirable contributions to the public interest, and that in itself is sufficient justification for the expense where neighbors encroach on producers' properties.

In other operations, the making of lakes and desirable real estate property has more than paid the original cost of land plus reclamation costs. Disposal of surplus sand and strippings, at certain locations, is conducted as an essential part of operations so as to produce desired conditions and lessen the ultimate cost of rehabilitation.

Such costs are a part of current operating cost and are a legitimate tax benefit. The government gains more later from taxes on the sale of real estate, and local communities benefit from the

development of taxable property.

Reclamation is of utmost importance in a program that must also eliminate hazards, noise, dust and all other sources of complaint. Steps toward self-regulation along with a program of education to acquaint the public with the essentiality and problems of these industries, will go a long way to prevent compulsory regulation not only on how a producer may operate but where he may operate and if he can operate.

Bron Hordburg

# Here's your profit line from Gardner-Denver



**GARDNER-DENVER** 



Gardner-Denver Company, Quinty, Illinois In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Ave., Taronto 16, Ontario More construction work this year means more profit opportunities for you — if you're equipped with first-line Gardner-Denver construction equipment. Send for descriptive bulletins.



Portable Compressors from 60 to 600 c.f.m.



"Air Trac" and Wagon Drills with sectional rods for low-cost deep hole drilling.
Note "Air Trac" towing its own portable compressor.



Tractor Jumbo — with Direct Connected compressor, rock drills and hydraulic boom jumbos.

## **ROCKY'S NOTES**

NATHAN C. ROCKWOOD

FOR OLDTIMERS versed in the principles of economics, or political economy, as taught in schools and colleges of a generation ago, or economics as learned by business experience dating back 25 years or more, it is difficult to grasp the changes in this so-called science that have, apparently, been generallly accepted and quite firmly established in the federal government in the last 20 years. Many of us think back to the advent of the New Deal, with its mounting government expenditures, the piling up of huge annual deficits, the tremendous and expensive bureaucracy required, etc.; we could see only bankruptcy ahead for our country.

Apparently, we were at fault in comparing the economy of federal government with that of a business organization or of an individual. In our day debt was something to be rid of as soon as possible and thrift in both personal and business management a virtue. However, we must remember that this was a theory of economy based on "hard" money. The wealth of the nation was counted in gold and silver coins and bullion, and we knew that the purchasing power of money fluctuated from time to time in terms of the commodities it would buy - whether the supply of money was ample or tight. The issues of paper money and other forms of credit were backed by a percentage of hard money reserve, and the amount of paper dollars that could be issued was limited by the current reserve. Consequently there were periodic times of tight money and credit, and it was not prudent to gamble with debt under those conditions.

#### Experience vs. Theory

From the experience gained in financing two world wars and under the New Deal we have learned that "money" may be anything the federal government says it is. Debt is no longer a burden to be got rid of, we are told, but wealth in the sense that it is now the source of nearly all our present money. The more debt the more money, and the more money available the higher are wages, prices and the level of business activity, so apparently it makes nearly everyone except pensioners happy; and to be elected or reelected to public office it is only necessary to promise more of the same.

While this still sounds a good deal like nonsense to many of us, no one can deny that this philosophy has apparently worked. More people have more money, more automobiles, more television sets, own more homes, etc. that is a larger proportion of the people - than ever before. It all has been accompanied by a lowering of the purchasing power of the paper money, but because of the tremendous increases in indirect costs, as in taxes for the same public services we had before, it is not possible to say exactly how much the change in the basis of money from gold and silver to debt has actually depreciated the purchasing power of the dollar.

We are now told that one need not worry about the mere size of the national debt. It is not the amount, but the percentage of national income required to service it that really counts. Hence, as national income increases faster than the percentage of that income required to pay interest on the debt, everything will be lovely. Most of us - of the old school - can't help wondering what will, or would, happen if there were a sudden or substantial slump in national income, but we are told to put that fear behind us, for by operating under the new principles of political economy, there never need be a slump. We can just keep on expanding our economy indefinitely, for no one can see an end to human wants.

#### Something To Think About

The matter has graduated into more than an abstract theory because we have been and are operating under it. It is the only kind of political economy the younger generation knows. The proposed 100 billion dollars for highway construction and rehabilitation during the next ten years is a practical part of the theory in which our readers have a very definite personal interest. At least a considerable share of this fund will have to come from increased debt.

Is this new political economy sound? We doubt if anyone can answer that one. It involves the whole philosophy of money. What is it for? Is there any better use for it, as a medium of exchange, regardless of its source, than to provide employment and thus to create things like automobiles and modern highways that nearly all the

people can use? If paying of the national debt will restrict the amount of money issued, need it ever be paid off? Why shouldn't the debt be increased if expanding business and industrial activity requires constantly more spending money?

We wouldn't pretend to answer any of these questions. No one could answer them except through concepts based on his own understanding of those theories of political economy which he accepts. They are certainly at odds with the theories we all held up to a generation ago. On the other hand the very nature of national debt has changed. In the early days of our republic we had to borrow gold or silver, and sooner or later gold and silver had to be returned to the lenders. Now the government borrows credit - private credit - from institutions and individuals, who do not desire to be paid in anything but interest-bearing certificates of indebtedness. These certificates while evidence of a huge national debt are nevertheless wealth when in the strong boxes of colleges, hospitals, insurance companies, pension trusts, etc. To redeem any great amount of them would put many people to great efforts to find other "sound" investments. Obviously, the income now based on them would have to come from other sources possibly from direct government subsidies.

The only logical arguments against this conception of political economy we have seen are based on fear that history will repeat - that every previous case where a government debased its currency disaster followed. In other words, the power to issue fiat money may be abused. True, history may be repeated, but the accepted basis of money when that history was made was gold and silver. It isn't anymore. True, power of any kind can be and often is abused. Bankers and speculators abused the power to manipulate the purchasing power of hard money, to their own advantage.

President Eisenhower has placed the most emphasis, apparently, on a dollar of stable purchasing power. Balancing the national budget and reduction of the national debt are evidently considered of lesser importance. From the standpoint of the immediate general welfare it probably is the most

(Continued on page 104)

ROEBLING ANNOUNCES TO AMERICAN INDUSTRY
IT'S NEW ROYAL BLUE WIRE ROPE...



STRONGER THAN YESTERDAY'S STRONGEST!

VASTLY INCREASES — EVEN DOUBLES — SERVICE LIFE!

WITH THE DEVELOPMENT of Roebling type 1105 wire — the finest high carbon rope wire ever produced—Roebling leads the field in bringing American industry the unprecedented efficiency and economy inherent in its new ROYAL BLUE Wire Rope.

\* Roebling is ready to supply the new ROYAL BLUE Wire Rope in EVERY DIAMETER from 1/4" to 31/2" and in EVERY STANDARD CONSTRUCTION with an independent wire rope core.

\* Roebling guarantees ROYAL BLUE Wire Rope to be at least 15% stronger than any standard wire rope of the same size and construction formerly available.

\* Roebling ROYAL BLUE Wire Rope has unequalled resistance to impact, crushing, abrasion and fatigue.

Write us for the full story on ROYAL BLUE Wire Rope, or contact your distributor or nearest Roebling branch office.

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## LABOR RELATIONS TRENDS

By NATHAN C. ROCKWOOD

#### Multiple Employers but One for Reckoning Overtime

SECULE MASHING AND

An especially interesting decision of the U. S. District Court, District of southern California, may or may not be relevant to numerous producers in these industries. That depends on how general the practice may be for producers to operate different branches or parts of their enterprises under various subsidiary corporations, or partnerships, which have practically common ownership. Under such conditions there may be one [or a few] skilled worker who does work for more than one corporation, and is consequently carried on the payrolls of two or more of them. This would be the simplest way of keeping the separate cost records of the different enterprises.

For example, we believe it is not uncommon for a sand and gravel company to operate a ready-mixed concrete business under a separate incorporation, although the ownership may be substantially the same in both companies. Or an aggregate producer may operate a concrete products enterprise as a subsidiary or side-line. Such being the case, the employer, under this court decision, is one and the same, and cannot escape payment of overtime by proving that an employe is ineligible because he did not work more than 40 hrs. a week for any one of the companies.

#### Case of a Welder

The full text of the decision is as follows:

"This cause having duly come on for trial on October 14 and 15, 1954 before the Honorable Campbell E. Beaumont, judge presiding James F. Scott, assistant regional attorney, appearing as counsel for plaintiff, and Frank C. Lerrigo, appearing as counsel for defendants, and the Court having heard and considered the evidence and arguments of the respective parties and being fully advised in the premises, now makes its Findings of Fact as follows:

#### **Findings of Fact**

"I. Plaintiff James P. Mitchell, Secretary of Labor, United States Department of Labor, brings this action to recover from the defendants unpaid overtime compensation due their employe, Osie M. Williams, under the provisions of Section 16(c) of the Fair Labor Standards Act of 1938, as amended, (Act of June 25, 1928, 52

Stat. 1050, 63 Stat. 910; U.S.C. Ti. 29, sec et seq. hereinafter referred to as the Act.

"II. Osie M. Williams has filed with the plaintiff a written request to bring this action claiming unpaid overtime compensation under Section 7 of the Act.

"III. Defendant Thompson Materials and Construction Co., Inc., is a California corporation located at Dome and Union Streets, Avenal, Calif., where it is engaged in the production, sale and distribution of rock, sand, gravel and ready-mix cement. During the period involved in this action, March 23, 1951 to August 3, 1952, such material was sold and used in the repair, maintenance and reconstruction of oil field installations producing petroleum products for interstate highways, and by the Southern Pacific Railroad to repair signals on its interstate roadbed.

"IV. Defendant George L. Thompson is the president and general manager of Thompson Materials and Construction Co., Inc., and owner of 97.7 percent of its issued stock. He is chairman of the board of directors, the other member being his wife and Elsie V. Smith, office manager, and he is in sole charge of the business operations and conditions and practices of employment of Thompson Materials and Construction Co., Inc.

"V. Defendant George L. Thompson, doing business as T & C Pump Co., is engaged in the manufacture, servicing and repair of a deep-well pump used to pump oil wells producing petroleum products for interstate commerce. T & C Pump Co. rents space for its operation from Thompson Materials and Construction Co., Inc., and during the period involved paid \$327.89 to Thompson Materials and Construction Co., Inc., as such rental and for gasoline purchases. George L. Thompson is in sole charge of the business operations and conditions and practices of employment of T&C Pump Co.

"VI. Thompson Crane and Trucking Co., was a partnership in which George L. Thompson held 56¼ percent interest as the sole general partner and a 25 percent interest as a limited partner, while defendants Wayne Town, William Mouran and Bruce Johnesey each held a 6¼ percent interest as limited partners. The firm operated a fleet of flatbed trucks to

haul oil field equipment, pipe, etc. and to erect, dismantle, move and reërect oil-well derricks, producing petroleum products for interstate commerce. Thompson Crane and Trucking Co. rented space for its operations from Thompson Materials and Construction Co., Inc., and during the period involved paid the latter firm \$15,031.56 as rental for parking trucks, gasoline purchases and steam cleaning and weighing trucks. George L. Thompson was in sole charge of the business operations and conditions and practices of employment of Thompson Crane and Trucking Co.

"VII. Cerutti and Thompson Tranportation Co. is a partnership in which defendants George L. Thompson and Alvin J. Cerutti each own a one-half interest as general partners. The firm operates a fleet of tank trucks hauling supplies and chemicals for drilling, maintaining and operating oil wells producing petroleum products for interstate commerce; hauling crude oil from oil-well sites to refineries, or to tank farms or pumping stations for piping to refineries, for producing petroleum products for interstate commerce; and hauling road oil for counties and the State of California, or contractors therewith, for use in the repair, maintenance and reconstruction of interstate highways. The place of business of Cerutti and Thompson Transportation Co. is Riverdale, Calif., where Alvin J. Cerutti is in active charge of its business operations and its conditions and practices of employment. However, these trucks of Cerutti and Thompson Transportation Co. are permanently garaged on the premises of Thompson Materials and Construction Co., Inc., in Avenal, Calif., and are dispatched under the supervision of George L. Thompson. During the period involved Cerutti and Thompson Transportation Co. paid Thompson Materials and Construction Co., Inc., \$6,705.21 as rental for parking trucks and for gasoline purchases.

"VIII. Throughout the period involved, George L. Thompson acted directly and indirectly in the interest of the other named defendants in relation to Mr. Williams.

"IX. Osie M. Williams was employed as a welder from March 23, 1951 to August 3, 1952, and performed his work on the premises of

(Continued on page 104)



ASTERN New Mexico aggregate requires thorough processing; especially certain veins that are laced with clays. Sam Sanders reports that the Eagle Washing and Classifying Section at his plant is "delivering the goods" Eagle equipment consists of a 32' single type water scalping tank with 3-cell collecting-blending flume to assure wide range of blends, a 36" x 25' single screw washerclassifer-dehydrator processing one gradation of sand and a 24" x 25' single screw unit processing another gradation. A 36" x 30' double log washer thoroughly cleans gravel.

Originally Sanders' plant employed a 12' water scalping tank and 36' single screw—larger tank and additional washers were added later in an expansion program. Complete range of materials to specification are produced, marketed in the Portales-Clovis area and in western Texas. Here again Eagle engineering "know how" and experience are paying off for this progressive producer. Why not consult Eagle concerning your problem—there's a factory trained distributor in your area. Send for Catalog 55.



PROFITS Start With An Eagle
"SWINTEK" Dredging Ladder At
Sam Sanders Plant

A 10"-50' heavy duty "Swintek" on Sanders' dredge (largest in the state) insures maximum production—no shutdowns to open clogged lines. The plant frequently operates 24 hrs. per day and is lighted for night operation. Output overage 100 yds. material per hr. Eagle "Swintek" Ladders described in Catalog 83.

# PEOPLE

### IN THE NEWS

#### **Universal Appointments**

HENRY P. REID, vice-president of engineering, Universal Atlas Cement Co., New York, N. Y., has retired after 31 years of service, but will continue with the company in a consulting capacity. Louis M. Funderburg. vice-president, assumes Mr. Reid's engineering duties in addition to his present direction of operating, purchasing and tests and research. Gordon C. Huth has been elected to the newly created office of vice-president of industrial relations. W. Owen Lawrence has been appointed assistant vice-president of operations, and Raymond L. Walsh has been named assistant vice-president in charge of the engineering division.

Mr. Reid has been associated with the company since 1924, serving successively as special engineer, operating engineer, assistant to the president, chief engineer and vice-president of engineering. In his engineering and research work, Mr. Reid has directed much of the building and rehabilitation of the company's plants, as well as many developments in rotary kiln operations, fuel economy, rock and clinker grinding, dust control and collection. Born in Tennent, N. J., Mr. Reid was graduated from Cornell University, Ithaca, N. Y., with a degree in mechanical engineering. He is past chairman of the General Technical Committee of the Portland Cement Association and former chairman of the P.C.A. Manufacturing Research Committee.

Mr. Funderburg, a native of Gadaden, Ala., has been with Universal Atlas for 32 years. He received his



Henry P. Reid

technical education at Alabama Polytechnic Institute, Auburn, Ala., and joined the Leeds, Ala., plant in 1923 as a draftsman. He became assistant engineer and then plant superintendent, which position he held from 1936 to 1942. He was appointed operating manager at New York in 1942 and general operating manager in 1944 and was elected vice-president of operations in 1946.

Mr. Huth is a native of Superior, Wis. He started with Universal Atlas as a machinist helper at the Duluth, Minn., plant. Transferring to the chemical laboratory and the safety and labor department, he became supervisor of safety and labor. He was appointed safety director at Chicago in 1930, serving until 1937, when he became assistant manager of indus-

trial relations. He was assistant director of industrial relations at Pittsburgh for U. S. Steel Corp. of Delaware from 1938 to 1941, when he rejoined Universal Atlas at New York as manager of industrial relations.

Mr. Lawrence was born in Adamsville, Ala., and attended Tulane University, New Orleans, La., Birmingham-Southern College, Birmingham, Ala., and the University of Alabama, University, Ala., before joining the Leeds, Ala., plant in 1933. He transferred to the New York office for two years as field engineer, returning to Leeds in 1942 as plant engineer, becoming assistant plant manager in 1944 and plant manager in 1945. He was made assistant plant manager at Buffington, Ind., in 1948 and one year later was appointed manager of the plant. In 1954 he became general opcrating manager at New York.

Mr. Walsh joined Universal Atlas at Chicago in 1925 as assistant electrical engineer, became electrical engineer in 1929, was made assistant chief engineer in New York in 1944, and appointed chief engineer in 1953. A native of Chicago, he is a graduate of electrical engineering at Armour (now Illinois) Institute of Technology. He has served with the Bureau of Accident prevention and Insurance of the Portland Cement Association, as well as on the subcommittee for electrical hazards in quarry operations.

#### General Chairman

THEODORE W. JONES, production manager for New Haven Trap Rock Co., New Haven, Conn., who was re-



Louis M. Funderburg



Gordon C. Huth



W. Owen Lawrence



Raymond L. Welsh

cently elected general chairman of the Cement and Quarry Section of the National Safety Council, Chicago, Ill., has been associated with the trap rock business since 1928, when he joined the Connecticut Quarries Co. while attending Worcester Polytechnic Institute. He worked part time for the firm and finished a college course at Yale University, graduating with a B.S. degree in 1931. He continued with the company as an engineer until 1935 when it was merged and consolidated with the New Haven Trap Rock Co., and he became safety engineer. He remained in that capacity until 1951 when he was appointed production manager.

Mr. Jones is a member of the Accident Prevention Committee of the National Crushed Stone Association, is a charter member of the Connecticut Safety Society, a member of the American Society of Safety Engineers, and is first vice-president of the Connecticut Society of Civil Engineers.

#### P.C.A. Appointments

James D. Piper, formerly district engineer in charge of the Austin, Texas, office of the Portland Cement Association, Chicago, Ill., has been named vice-president for promotion. He succeeds W. D. M. Allan, who has been named vice-president and secretary.

Mr. Piper has been district engineer for Texas since 1949. He joined P.C.A. in 1937 as a structural engineer in the Oklahoma City office. He served as structural engineer in Austin from 1939 to 1942, when he entered the U. S. Naval Civil Engineer Corps (Seabees). Following 30 months' duty in the South Pacific, he returned to the Portland Cement Association in 1945 as a structural field engineer in Houston, Texas. In 1946, Mr. Piper was appointed district engineer in the Dallas office and became district en-



James D. Piper



W. D. M. Allon

gineer for Texas in 1949. Prior to joining the P.C.A., Mr. Piper was an architectural engineer for the State of Oklahoma. He was graduated from Oklahoma A. & M. College, Stillwater, Okla., with a B.S. degree in architectural engineering.

Mr. Allan is a veteran of 36 years with the P.C.A. and has served as vice-president for promotion and secretary for the past three years. In his new position as vice-president, he will direct special activities of the Association. Mr. Allan joined the Portland Cement Association field staff in 1918. In 1926 he was named manager of the Cement Products Bureau, serving until 1933, when he became director of promotion. In 1947 he was elected secretary in addition to his duties as director of promotion. Five years later he was promoted to vice-president for promotion and secretary.

#### Officers Re-elected

FRANK L. CHRISTY has been reelected president of The Marietta Concrete Corp., Marietta, Ohio. Also re-elected are F. Leonard Christy, vice-president of sales; C. B. Ross, vice-president of production; R. Neil Christy, vice-president of engineering; C. F. Fogle, Sr., secretary; and C. K. Smith, treasurer. Appointment of the following branch managers has also been announced: J. Darwin Ross, manager of Baltimore plant; Robert D. Johnson, manager, Nashville branch, with Fred Needham as plant superintendent: Vernon Gatewood, manager, Charlotte branch; R. Neil Christy, manager, Hollywood, Fla., branch; and Robert Christy, manager of the recently acquired Jamestown, N. Y., branch.

#### Louisville Names Officers

DAVID E. WILLINGHAM has been named vice-president of Louisville Cement Co., Louisville, Ky., and W. P. Leake has been made general superintendent of production. Mr. Willingham was president of the Louisville

Cement Corp. of Indiana, manufacturing subsidiary, which has been merged with the parent company, and Mr. Leake was a vice-president. Other officers of the recently merged subsidiary were also officers of the parent company.

Mr. Willingham, a native of Fulton, Ky., attended Evansville College, Evansville, Ind., and then joined the



David E. Willingham

production staff of Louisville Cement Co. in 1925, serving in various capacities until his appointment as president of the manufacturing subsidiary in 1950.

Mr. Leake is a graduate of Rose Polytechnic Institute, Terre Haute, Ind., and joined the company in 1937. He was subsequently appointed superintendent of the lime plant at Milltown, Ind., and in 1948 was transferred to Speed, Ind., as superintend-



W. P. Looke

ent of the portland cement division of Louisville Cement Corp. He was appointed vice-president of this manufacturing subsidiary in 1950.

#### Safety Council Officers

HENRY H. KIRWIN, treasurer, Eastern Rock Products, Inc., Utica, N. Y., has been elected president of the Eastern New York Mineral Aggregates Safety Council. David E. Stevens, Jr., plant engineer at the Hudson plant of Lone Star Cement Corp., has been named vice-president; Edward G. Sullivan, assistant superintendent, New York Trap Rock Corp., Haverstraw, N. Y., secretary; and Normand Aurand, Universal Atlas Cement Co., treasurer.

#### Lone Star Vice-President

E. B. MITCHELL, JR., has been named vice-president and manager of the Texas division of Lone Star Cement Corp., New York, N. Y., succeeding the late J. Bryan Oldham. Mr. Mitchell has been associated with the firm for 33 years and has served as division sales manager at Dallas since 1942. He will be succeeded by F. Nelson Bane. Willis R. Greer has been made assistant division sales manager.

#### **Named Vice-President**

MORGAN MCCALL has been appointed vice-president of Texas Industries, Inc., Dallas, Texas. He was formerly general executive assistant.

#### OBITUARIES

J. HAMILTON DUFFY, chairman of the board of directors of the Ohio River Sand Co., Louisville, Ky., and one of the last of the old-time rivermen, died January 3. He was 80 years of age and had been associated with the company for 45 years, which was founded by his father, the late J. T. Duffy, about 1890. A native of Jeffersonville, Mr. Duffy was general manager of the Ohio River Sand Co. for many years before becoming president in 1945. He retired in 1951 and became chairman of the board. "Capt. Duffy," as he was known to rivermen throughout the Ohio and Mississippi valleys, was a founder of the National Sand and Gravel Association and was president of the Cumberland River Sand Co., Nashville, Tenn., from 1930 to 1954.

PAUL KIRKBRIDE, retired manager of the Independence, Kan., plant of Universal Atlas Cement Co., New York, N. Y., died January 11. He was 65 years old. A native of St. Augustine, Fla., Mr. Kirkbride was graduated from Virginia Polytechnic Institute, Blacksburg, Va., with a B.S. degree in civil engineering. He served for six years as draftman and assistant roadmaster of the N. & W. Rail-

road. He enlisted in the Corps of Engineers, U. S. Army, in 1917, and served two years in France. Mr. Kirkbride joined the Northampton, Penn, plant of Universal Atlas in 1919 as engineer and assistant maintenance superintendent. In 1924, he was transferred to the Hannibal, Mo., plant as assistant general superintendent, remaining there until 1943, when he moved to Independence as assistant plant manager. He was appointed plant manager in 1945, and served in this position until his retirement.

OSCAR H. GOSSWEIN, retired technical service manager in the Chicago office of Universal Atlas Cement Co., New York, N. Y., died suddenly on January 1. A native of Lafavette, Ind., Mr. Gosswein was graduated from Purdue University with a B.S. degree in civil engineering. He joined Universal Atlas in 1917 as field engineer in the technical service bureau. He was made technical service manager in 1930. Recognized throughout the Mid-West as an outstanding authority on cement and concrete uses, Mr. Gosswein was author of numerous technical papers on the subject. He was a member of the American Concrete Institute and the Western Society of Engineers.

JAMES T. DUFFY, president of the Ohio River Sand Co., Louisville, Ky., died January 14 after a long illness. He was 68 years old and had served as president of the firm since 1951. Mr. Duffy was the last of three brothers who had held the presidency of the company, which was founded by their father in 1890. They were J. Hamilton Duffy, chairman of the board, who died January 3, 1955, and Thomas J. Duffy, who died in 1941. Mr. Duffy, who was secretary-treasurer of the firm from 1930 to 1951, also served as secretary of the Cumberland River Sand Co., Nashville, Tenn. For several years he was secretary-treasurer of the Kentucky Association of Sand and Gravel Producers.

R. MELVIN POTTENGER, manager of the ready-mixed concrete division of the Brighton Sand and Gravel Co., Sacramento, Calif., died December 27. He was 46 years of age and had been associated with the company since May, 1953. He served as manager of the Perkins Gravel Co., Sacramento, Calif., for six years, and in 1952 was part owner of a ready-mixed concrete firm in Sacramento.

CARL L. LIND, one of the founders of the former Altoona Concrete Products Co., Altoona, Penn., died January 13 after a long illness. Mr. Lind retired from the company last September at the time it was sold to the Con-

crete Products Co. of America. His brother, Frank, also one of the founders, died last May 31,

MARION F. HEARD, assistant plant manager and former chief chemist at the San Andreas plant of Calaveras Cement Co., San Francisco, Calif, died suddenly on December 5. He was 57 years old and had been associated with the company for more than 25 years.

GEORGE L. OLFING, laboratory assistant in the research and control department of France Stone Co., Toledo, Ohio, died January 6. He was 54 years of age. Before joining the research and control department in 1946, Mr. Olfing had been superintendent of the Holland quarry for 20 years.

ELMORE JAY MANNING, owner and operator of the Tri-City Sand Co., Jeffersonville, Ky., died suddenly on January 14 while on his way to the office. He was 68 years old and had operated the sand plant since World War II.

FRED R. GIFFORD, vice-president and director of Gifford-Hill & Co., Inc., Dallas, Texas, died January 18. He was 70 years of age and had been associated with the company since 1910.

CLARENCE PETIT SIDWELL, owner of the Sidwell Sand Co., Cheswick, Ohio, died January 1.

CHARLES LORRAINE RUFFIN, JR., president of the Massaponnax Sand and Gravel Co., Richmond, Va., died December 28. He was 54 years old. A native of Richmond, Mr. Ruffin was a graduate of Virginia Military Institute, Lexington, Va.

CLARENCE PAULEY, superintendent of the Zenith Sand Co., St. Albans, W. Va., died January 5. He was 46 years old.

CHARLES ADDIS MARTIN, Sa., senior partner of the Martin Concrete Products Co., Coffeyville, Kan., died January 3. He was 68 years of age.

WILLIS K. MILLER, retired president of the Granite Sand and Gravel Co., Indianapolis, Ind., passed away January 4 at the age of 87.

JOHN JOSEPH REGAN, vice-president of the Sellersburg Stone Co., Inc., Sellersburg, Ind., died January 12. He was 56 years old.

FLOYD A. DODD, owner and operator of the Dodd Sand and Gravel Co., Norman, Okla., died January 4 at the age of 55.

MARTIN J. FINN, who for many years was operator of the New England Crushed Stone Co., Boston, Mass., died January 8.



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# **INDUSTRY**

# **NEWS**

#### **Cover Picture**

ON THIS MONTH'S COVER IS Shown the crushed limestone plant of Naranja Rock Co., Naranja, Fla. Diesel en-



gines supply power to drive Williams primary hammer mill crusher and secondary crusher; Caterpillar D-13000 and D-364 engines. Electric motors drive conveyors, screen, and sand

drag. In addition to the crushing plant, the company also operates a ready-mixed concrete plant and concrete products plant. This progressive company has been active in sales promotion of its products, and has constructed attractive offices having large neon signs showing the company's name which can be seen for many miles at night

#### **Buys Gravel Firm**

SERVICE ROCK Co., Riverside, Calif., has been purchased by Dewey Burden, owner of Owl Rock Products Co., Monrovia, Calif., and Owl Truck and Construction Co., Compton, Calif. The former owners, Stewart Adler and P. M. Hayden, hold executive positions with the sand, gravel and ready-mixed firm. The company recently leased 2000 acres of quarry land in Lytle Creek, Calif., and future plans are to build a crushed stone plant there.

#### **Resumes Operations**

ACME MATERIAL Co., Tulsa, Okla., has resumed operations at its crushed stone, plant, following a fire of undetermined origin, which destroyed an estimated \$100,000 worth of machinery and buildings.

#### **Cement Plant Expansion**

WHITEHALL CEMENT MANUFACTURING Co. is modernizing its Cementon, Penn., plant, at a cost of approximately \$2,400,000. A new storage system is being installed, which includes a primary and a secondary crusher, six storage silos, and a series of conveyor belts leading from the crushers to the silos. A central unloading station is also being added. Six unit fired coal mills, one for each kiln, are being in-

stalled. Future plans include a new raw mill and additions to the finishing mill; two additional silos for finished cement storage; and installation of two new kilns.

#### To Open Gypsum Mine

RUBEROID Co., New York, N. Y., has acquired an option of 1200 acres of the newly discovered gypsum deposits in Martin County, Ind. The company reportedly is planning a plant site on the Ralph King farm near Willow Valley, a short distance from the Canfield farm where United States Gypsum Co., Chicago, Ill., has started preliminary drilling operations. National Gypsum Co., Buffalo, N. Y. is also opening a mine and plant in the area.

#### **Builds Crushed Stone Plant**

STOCKBRIDGE STONE Co., a subsidiary of Birmingham Slag Co., is building a limestone plant at Calera, Ark., costing approximately \$1,500,000. Dams are being built to supply water for washing operations. The plant is expected to have a capacity of 1,000,000 tons of limestone annually, which will be sold for road construction and other similar construction purposes.

#### To Buy Feldspar Firms

Pacific Tin Consolidated Corp., New York, N. Y., has announced plans to purchase several feldspar mining and processing plants in North Carolina, Georgia and Tennessee from members of the Deneen and Rogers families and their associates, Present management and operating personnel would be retained under the new administration.

#### **Kaiser Expansion**

KAISER GYPSUM Co., INC., Oakland, Calif., is expanding its Long Beach, Calif., gypsum products plant, at an approximate cost of \$3,000,000, increasing capacity more than 60 percent. The expansion will involve the gypsum board production line, drying capacity and calcining facilities, as well as the construction of four additional buildings, including a 35,000ton capacity raw gypsum storage building. The company has acquired land adjacent to the present plant which will double the plant area. Other Kaiser gypsum plants are located at Redwood City, Calif., and Seattle, Wash. The firm is a wholly-owned subsidiary of Permanente Cement Co., Oakland.



Keiser Gypsum Co.'s gypsum products plant at Long Beach, Calif. Datted line indicates additional land acquired for the plant's \$3,000,000 expansion program

#### **Bituminous Conference**

THE NATIONAL SAND AND GRAVEL Association has announced the second annual Conference on Use of Sand and Gravel in Bituminous Mixtures, originally scheduled for December, 1954, has been rescheduled for March 22, 23 and 24 at the University of Maryland. Specific items for discussion at the conference will include: description of the various types of bituminous road surfaces and bases: aggregate specifications for bituminous mixtures; correlation between laboratory tests and field performance of bituminous mixtures; different types of bitumens and their application; procedures for the design of bituminous mixtures; description of the Western Association of State Highway Officials test road; comparisons of the performance of different aggregates in bituminous surfaces in North Carolina; use of additives to prevent stripping of bituminous mixtures in the presence of water; and principles of bituminous construction. Also included will be a demonstration of laboratory tests of bituminous mixtures, moving pictures showing various types of construction and equipment, and open forum discussions on subjects pertaining to the use of gravel in bituminous mixtures.

#### **Basic Refractories Plant**

KAISER ALUMINUM AND CHEMICAL CORP., Chemicals Div., is planning to build a basic refractories plant at Columbiana, Ohio, at an approximate cost of \$4,000,000. Construction is scheduled to begin in April, and be completed late in 1955. The plant will be located on a 100-acre site on the main line of the Pennsylvania Railroad and near the Ohio-Pennsylvania Turnpike. A railroad spur will lead directly to the plant from the main line. Facilities will include a quality control laboratory and machine shop. A covered track hopper is to be installed for unloading raw materials, and large capacity storage facilities will be provided for raw materials and finished products.

#### Percentage Depletion Decision

THE UNITED STATES COURT OF APPEALS for the Fifth Circuit upheld the decision of the District Court for the Middle District of Georgia, in the Cherokee Brick and Tile Co. case, that the burning and molding of brick and tile clay "are ordinary treatment processes" for the purpose of computing percentage depletion. Under this decision, the processes applied by producers of sand, gravel and industrial sand would be considered ordinary treatment processes if they are normally applied to obtain the commer-

cially marketable products. While the decision may not be applied directly unless an industry can show that only negligible amounts of the mineral are sold before application of a contested process, it does reject the approach of the Treasury Department on treatment processes and may be helpful in negotiations with revenue agents.

#### **Cement Plants Expand**

GENERAL PORTLAND CEMENT Co., Chicago, Ill., is installing a new 425-ft. kiln and additional grinding facilities at its Dallas, Texas, cement plant. The expansion is expected to be completed by July, 1955, increasing plant capacity by 1,250,000 bbl. of cement annually.

Modernization of the Houston, Texas, plant has been completed, increasing that plant's annual production by 1,250,000 bbl. of cement.

#### **Limestone Company Financing**

MINERALS AND CHEMICAL CORP., New York, N. Y., is selling 435,934 shares of common stock at \$24.50 per share. Proceeds from 125,000 shares will be used to purchase limestone properties at Marblehead, Ohio, and Strasburg, Va., and for corporate purposes. Proceeds from the other 310,934 shares will go to selling stockholders which include Lazard Freres and Co. and associates and F. Eberstadt, and Co., Inc., and associates, each of which groups will retain approximately 60 percent of its present holdings.

#### **Change in Operating Name**

ANNOUNCEMENT was recently made that The J. F. Sours Estate, Bonny Brook Quarries, Carlisle, Penn., is now operating under the name of J. F. Sours, Bonny Brook Quarries.

#### **Limestone Quarry**

Hopper Brothers of Pawnee City, Neb., have started limestone quarrying operations on property south of Nelson, Neb., leased from Mrs. Henry Janssen, Mrs. Dick Bargen and Lloyd Bargen.

#### Stock Increase

IDEAL CEMENT Co., Denver, Colo., stockholders have authorized a stock increase from 2 to 4 million shares. The stock will be split on a share for share basis.

#### Lease Quarry Land

GOEHEGHAN AND MATHIS, Bardstown, Ky., have leased a tract of land at Flour Creek, Ky., from Harry K. Taylor and Llano and Ollie Britton, for their crushed stone operations. The firm also operates a stone quarry south of Falmouth, Ky., near Mt. Vernon.

#### **Buys More Barges**

New York Trap Rock Corp., New York, N. Y., has ordered 11 steel barges from Richmond Steel Co., Richmond, Va., at a cost of over \$500,000. Ten of the barges are of 1200 ton capacity, and the other is a 700-ton capacity covered barge for hauling pulverized limestone. The barges will be delivered to the Haverstraw, N. Y., plant by May, and bring the firm's total fleet to more than 200. The corporation has spent about \$2,000,000 on new barges within an 18-month period, and in 1954 more than 5,000,000 tons of stone were delivered from its four Hudson River plants.

#### **Make Marble Products**

Delbo Inc., Bonsecours, Que., has announced plans for a plant to finish white marble for building exteriors and tombstones, which may be built as Bonsecours or at Waterloo, Que. Total cost of the plant and equipment is expected to be about \$50,000. The firm also operates a white marble quarry producing 10 different sizes of white marble granules for terrazzo, artificial stone, stucco, poultry feed and other uses. A green stone deposit was recently developed by the company, which is said to be suitable for terrazzo and for insecticides.

#### **African Cement Shortages**

CEMENT SHORTAGES in the Western Cape, South Africa, are expected to increase in 1955, and the government is not expected to permit cement imports. Clinker is being shipped by rail to the Cape plants but the railroads have not been able to move cement in sufficient quantities at a fast enough rate. The Cape's two cement plants have not been able to meet present demands.

#### **Develops Quarries**

DRAGON CEMENT Co., INC., has announced plans for the expansion and modernization of its Thomaston, Me., cement plant. A tunnel is being built, leading from its present limestone quarries in front of the mill to the site of new quarries which will be developed this year. The tunnel, 350 ft. long, 33 ft. high and 33 ft. wide, will be used by trucks to haul crushed stone from the new quarries to cars which will carry material to storage for crushing and grinding mills. The present quarries are expected to be worked out within three years.

#### **Buys Gravel Property**

TRIANGLE ROCK & GRAVEL Co, has purchased a 550-tract of land adjoining its plant at Lytle Creek, Calif. The company produces 23 grades of crushed stone, sand and gravel.

#### **Plans Cement Plant**

HALLIBURTON PORTLAND CEMENT Co., Corpus Christi, Texas, is expected to be the sole bidder for an 82-acre tract in the Salt River Bottom near Phoenix, Ariz., as a prospective site for a multi-million dollar cement plant. The land is being auctioned March 4, and a minimum price of \$24,627 has been set. The purchaser must agree to abide by smoke or dust-control ordinances which the city may pass, and also waive any damages which might result from odors from the city's nearby sewage disposal plant.

#### **Distribution Firm**

Construction Stone Corp. was recently formed to serve as a distributor for Michigan Limestone Co.'s crushed calcite and dolomite stone from Rogers City and Cedarville, Mich., plants. The corporation has offices in Cleveland, Ohio, and Detroit, Mich., and its officers are G. Garland, president of Construction Material Corp., H. L. Bliss, S. F. Dupont and T. B. Whittlesey.

#### **National Gypsum Earnings**

NATIONAL GYPSUM Co., Buffalo, N. Y., reports net earnings of \$9,490,780, or \$3.36 per share, for the first nine months of 1954, an increase of 58 percent over the net earnings of \$5,991,116, or \$2.12 per share, for the same period in 1953. Net sales amounted to \$93,543,039, for the first nine months of 1954, an increase of 7 percent over the same period in 1953, which amounted to \$87,787,092.

#### **Obtain Quarry Permit**

ROBERT MULLOY has received a permit for the operation of a stone quarry at Martinez, Calif., with the stipulation that trucks from the quarry would follow a specific route to eliminate possible traffic hazards. Operations are also limited to the hours between 7 a.m. and 6 p.m., Monday through Friday, with blasting limited from 9 a.m. until 4 p.m.

#### **Seeks Dredging Permit**

THE WILLAMETTE SAND AND GRAV-EL Co., Corvallis, Ore., has applied for a permit to dredge in Willamette river. Gravel would be excavated to a depth of 15 ft. below low water, by means of a slackline cable.

#### **Reduces Cement Price**

CANADA CEMENT Co., LTD., Montreal, Que., reduced cement prices as of December 1, 1954, which may be the result of heavy imports of European cement and prospects of greater competition from other Canadian cement plants. The St. Lawrence Cement Co. at Quebec City, still being built,

has made several shipments, and is expected to have an annual capacity of 1,500,000 bbl. when completed. Canada Cement Co.'s capacity is 19,000,-000 bbl. annually.

#### **Opens Sand Plant**

SHOFFNER SAND Co., Salina, Kan., owned by U. C. Shoffner, has opened a sand plant about two miles east of Topeka, Kan., near the Kaw River. Mr. Shoffner also operates a plant near Solomon, Kan.

#### Stock Increase

LEHION PORTLAND CEMENT Co., Allentown, Penn., stockholders voted authorization of a \$40,000,000 increase in capital stock and a \$10,000,000 increase in borrowing power. The authorization enables directors of the company to increase capitalization to \$100,000,000, or 4,000,000 shares at \$25 par value each. Present capitalization is \$60,100,000, with about 2,400,000 shares of \$25 par value stock.

#### Offers Extra Services

SUGAR GROVE SAND AND GRAVEL Co., Lancaster, Ohio, in addition to producing sand and gravel, is offering farm services to its customers. These include digging streams, sewer lines, farm ponds and erecting dams. The company also excavates basements, and performs various grading and bull-dozing operations.

#### **Builds Cement Plant**

PEERLESS CEMENT CORP., has announced plans for a cement mill at Detroit, Mich., with an annual capacity of 1,000,000 bbl., increasing present plant facilities approximately 25 percent. The plant is being built on a 14-acre site, and is expected to cost about \$7 million by the time it is completed late in 1956 or early 1957.

#### Sand and Gravel Plant

SOUTHERN MATERIALS Co., is establishing a sand and gravel plant at

Richmond, Va., on a 500-acre tract of land, at a cost of approximately \$100,000. Plant operations will include excavating, washing, crushing and sizing, and shipping will be handled by barge, railroad and truck. Clyde F. Gregson is president of the firm.

#### Lease Quarry Land

THE MIAMI RIVERS QUARRIES, INC., Sidney, Ohio, has leased 115 acres near Lockington, Ohio, for limestone and dolomite quarrying operations, which are scheduled to begin early in 1955. The organizers are Ralph W. Kerr, Sidney, Ohio; Charles E. Buel, Rockford, Ohio; and Lieudell E. Bauer, Sidney, Ohio.

#### **New Lime Company**

SHAMVA LIME AND CEMENT Co. was recently formed to develop an estimated 32,000,000-ton limestone deposit in Southern Rhodesia near Salisbury, South Africa. The firm is also considering building a cement plant, as the limestone deposit is near rail shipping facilities.

#### To Expand Gypsum Plant

UNITED STATES GYPSUM Co. has announced plans for expansion of its facilities at its Jacksonville, Fla., plant. Plans include a six-story steel building and packing plant additions. The new facilities are expected to increase the plant's gypsum board and plaster production by about 50 percent.

#### Moves Office

THE RIVERSIDE CEMENT Co., has announced that its purchasing department has been moved to the Riverside plant at Crestmore, Calif.

#### **Buys Silica Company**

OTTAWA SILICA Co., Ottawa, Ill., has acquired Standard Silica Corp., which is being operated as a wholly owned subsidiary. G. A. Thornton is president of the firm.

#### **Coming Conventions**

March 9-12, 1955-

American Concrete Pipe Association, 47th Annual Convention and Meeting, Sheraton-Plaza Hotel, Boston, Mass.

March 14-16, 1955-

Autoclave Building Products Association, 49th Annual Convention, Hotel Statler, Buffalo, N. Y. May 17-18, 1955-

Empire State Sand, Gravel and Ready Mix Association, Fourth Annual Meeting, Hotel Rochester, Rochester, N. Y.

May 11-13, 1955-

National Industrial Sand Association, Spring Meeting, The Homestead, Hot Springs, Va.

### HINTS

#### AND HELPS PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN



Coel unleader delivers to short, inclined belt conveyor serving bucket elevator ahead of row coal storage silos

#### Coal Unloader

AT A NEW LIGHTWEIGHT AGGREGATE PLANT in the Southeast, powdered coal is the fuel used in the rotary kilns. The coal is unloaded by a Farquhar unloader which delivers to a short, inclined belt conveyor that serves the bucket elevator ahead of the raw coal storage silos. The illustration shows the manner of installation.

#### **Portable Sand Screws**

PRODUCERS in sparsely settled parts of the west and southwest often find it necessary to move equipment to the job site rather than haul the finished product from a permanent plant.

In the illustration is shown an ingenious arrangement to provide portability for two 24 in. by 25 ft. double Eagle sand screws by welding a heavy yoke or tongue to the high ends. To move the screws, all that is needed is to run a two-wheel trailer under the units, latch them to the truck and port-



Yeke or tengue welded to high end of sand screw permits moving with the aid of two-wheel trailer and truck

ability is achieved. Many other equipment items in the plant, including truck bins, are similarly equipped.

#### **Quarry Drainage Unit**

AN IDEA which may be used in any quarry or gravel pit for drainage of surface water is shown in the illustration. The portable pumping structure, used at the Adirondack quarry and mining operation of Jones & Laughlin Steel Corp., can be lifted by a crane



Portable pump unit for quarry drainage

or power shovel and sling. Wire cloth around water end of pump keeps out debris. Sections of Naylor pipe are readily coupled to pump after drainage unit is placed in low point of pit.

The unit shown is equipped with a

Nagle 4-in. type QW vertical shaft centrifugal pump which is unaffected by gritty drainage water. This is one of ten such units at this operation. The pumps were supplied by Nagle Pumps, Inc., Chicago Heights, Ill.

#### **Conveyor Lockout Switches**

AT THE CLIMAX MOLYBDENUM Co., Climax, Colo., operation, about 100 type AFB condulets are employed as lockout switches, any one of which may stop the operation of the conveyors during emergencies. The lockout mechanism stops the conveyor and



Cendulets used for lockout switches to control belt conveyor

prevents the system from being accidentally or unknowingly restarted as a safety feature during investigation or repairs.

Suspended at fixed intervals along the conveyor system, the emergency switches are linked together by a red-dyed, steel-cored rope. Made by Crouse-Hinds Co., each switch condulet is cast from Feraloy and supports its length of pull rope by means of an internal spring packed in grease. When the rope is pulled, tripping a plunger unit, the switch contacts are opened. Thus the conveyor system can be stopped easily by any worker near the conveyor by reaching up and pulling the rope. The lockout mechanism of the switch pulled must be manually released to restart the conveyor. The lockout provides an additional safety feature in that a workman at a distant point cannot restart the conveyor system during inspection, repair or other maintenance.

The condulets are raintight, and are

furnished with single-pole, double-make switches: a push-button switch, rated at 30-A, 600 volts, a-c.; a spring contact switch, rated at one ampere, 300 volts; two amperes, 250 volts; or three amperes, 200 volts, a-c. or d-c.

#### **Loading Man-Sized Stone**

Loading Man-sized stone to a truck or transferring it from one point to another is often a difficult problem. In the first place, the material hangs up and does not tend to flow, but when it does start moving a small avalanche frequently results. This presents a danger.

A western producer solved this problem by allowing the stone to fall to a steel bin under which is a small apron conveyor. A gate in the side of the bin is also a part of the assembly. The



Apron conveyor assists in loading large stone into truck

conveyor is under the control of the truck operator. As a result, full control over the flow of stone is obtained. With this system, even a single piece of man-sized stone can be placed on top of a practically loaded truck without endangering the driver. The stone handled was in the 15 to 100-lb. size range.

#### **Wet Dust Collection**

COLLECTION OF ALL DUST from equipment such as a rotary dryer presents problems, especially if the amount of water removed is relatively large. Dry dust collectors installed close to the hot end of the dryer often will work satisfactorily at such locations as the water vapor has not had a chance to condense as steam. If one can visualize a dust particle surrounded by water vapor that is too hot to condense and actually wet the particle, a mental image is obtained of what happens at the dusty end of a dryer.



Wet type cyclone dust collector installation

If this stream of gas is carried in ducts or flues far enough, the water vapor condenses to steam and very often the particle becomes wet. The particle is not dust any more, but mud in suspension.

To collect such minute particles of mud in suspension, about all that is needed is some type of baffle plate for the mud particle to hit against where it adheres. These mud particles often build up in the outlet ducts, plugging them up. However, if the particle of mud is washed away as fast as it lands on the baffle plate, a dust collecting action is achieved that will clean up the gas stream efficiently.

In the illustration is shown a small 6-in. high-speed fan located between a small dust collector and the stack. A damper in the stack sends all the gas stream through the small cyclone. It is of steel about 4 ft. in diameter and 6 ft. high. The cyclone is of the conventional type except that it has a multiplicity of small water sprays inside to wash away the mud (dust) as fast as it sticks to the side of the collector. There is hardly a trace of dust leaving this part of the plant. Collectors of the same type at another plant have been in continuous use for 25 or more years, and even though the plant is in the heart of a city, no trouble has been experienced. Effluent from the collector is wasted.

#### Concrete Roof Slabs for Pipe Curing Kilns

AMERICAN VITRIFIED PIPE Co., constructed a new concrete pipe plant at Livonia, Mich., which employs some new ideas in construction of the three parallel curing rooms. The curing rooms are built with concrete block bearing walls and roofs of precast

concrete Flexicore slabs. There is no exposed steel in this construction to deteriorate under the high temperature and humidity conditions when curing concrete pipe.

Kiln and boiler room roof treatment on Flexicore slabs is ¼-in. fiberglass, vapor barrier and built-up roofing. The 6524 sq. ft. of slabs required were placed and grouted in two days by Price Brothers Co., Michigan Flexicore division.

#### Take-up Pulley Weight

WEIGHTS ON THE TAKE-UP PULLEY of a belt conveyor range from complicated to the simple. A crushed stone plant used its own product as a weight, as shown in the illustration. The photograph was taken at a Southern Pennsylvania plant.



Lerge stene serves as take-up pulley weight for conveyor

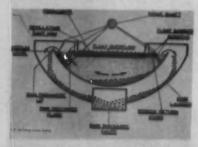
### NEW

### MACHINERY



#### **Telescopic Hoists**

THE HEIL Co., Milwaukee, Wis., has announced three telescopic hoists and weight-saving bodies for payloads ranging from 21- to 30-ton capacities. The hoists may be mounted inside or outside the chassis frame rails to fit a tandem truck or semi-trailer. A universal type loose parts kit is supplied with the hoist for mounting, and for a forward or backward push. The specially designed bodies accomodate the forward lifting point of the hoists; and the body may be mounted as low as possible for adequate tire clearance. Other features include: a dumping angle of 421/2 to 50 deg.; seamless steel hoist sleeves; and a choice of gas tank mountings.



#### **HMS Separatory Vessel**

THE ORE & CHEMICAL CORP., 80 Broad St., New York, N. Y., has developed a heavy media separation vessel, designated the "OCC Vessel," which is said to permit the entire separation process to be performed without mechanism or power except that required for lifting the sink from the pool. Its features are said to include

visibility of the separating process; no rotating parts in the medium; self-drainage, eliminating caked medium; slow motion and no vibration, making it adaptable to almost any foundation; and low horsepower requirements. The drive is by means of hydraulic cylinder actuated by a closed oil pressure system or by compressed air, if desired. Six basic designs are available, which range in capacity up to 400 t.p.h.



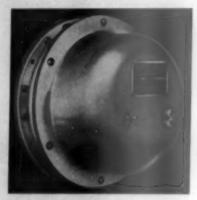
#### **Wagon Drill**

GARDNER-DENVER Co., Quincy, Ill., has introduced a heavy-duty wagon drill combination, designated WRM-123, which includes a drill with a 4½-in. dia. hammer for greater drilling speed and power for deep hole drilling. The combination also includes a ring seal shank and sectional drill rods, and the drill wagon is equipped with hydraulic power lifts for positioning the mast. The unit is designed for heavy-duty service, and handles steel changes of 10 to 12 ft. standard.

#### Flexible Shaft Coupling

THE FALK CORP., 3001 W. Canal St., Milwaukee 8, Wis., has brought out the Type F Steelflex Spacer coupling for use between motors and pumps where a space between shafts is necessary to permit removal of pump impeller shaft assemblies, or on applications where a gap up to 12 in. cannot be avoided. The coupling is designed to prevent damage from impact loads and shaft misalignment, and permits connection and disconnection of shafts without disassembling

the coupling. The coupling is prelubricated, and is said to require further lubricant once every six months.



#### **Bin Level Indicator**

THE BIN-DICATOR Co., 13946-163 Kercheval, Detroit 15, Mich., has announced the incorporation of a builtin bull's-eye signal light in its bin level indicator. The unit, designated Model "AL" Special Bin-Dicator, is available with a general purpose Micro switch. It has no springs or motors, the switch mechanism being operated by a flexible diaphragm which is actuated by pressure of the material in the bin or hopper. Various diaphragm materials are available, including cloth, rubber, neoprene with cloth interlining, Fiberglas, and asbestos cloth of several thicknesses. A toggle switch is provided so that the signal light may be shut off if desired.



#### Crane-Shovel

LINK-BELT SPEEDER CORP., Cedar Rapids, Iowa, has brought out the LS-58, ½-cu. yd. crane-shovel, featuring power hydraulic "Speed-o-Matic" controls. Alloy cast iron clutch shells are incorporated as well as anti-friction bearings and spur gears with machine-cut teeth. The all-welded

crawler base is stress-relieved, and a 53-in. dia., double-flanged turntable is designed to eliminate center pivot up-pull and provide greater stability. Three crawler lowers are available: the standard, with a 10 ft. 3 in. overall length; intermediate, 11 ft. long; and the long-wide lower has 12 ft. 1 in. overall length. Travel-steer jaw clutches are enclosed within the lower frame, and six single tread track rollers and two carrier rollers help maintain proper track alignment. Optional features include independent swing and travel, reversing clutches for either or both front and rear drums, and a patented retractable high gantry.



#### **Bulk-Transport Body**

BAUGHMAN-TRANSPORT Co., Jerseyville, Ill., has developed the "Bulkmobile" self-unloading bulk-transport body, available in lengths from 15 to 33 ft., with body sides up to 36 in. high. The discharge rate ranges from 1/2 to 2 t.p.m., depending on the weight of the material and the method of discharge. Four discharge attachments are available: a screw conveyor; belt and bucket elevator; belt conveyor; and distributor for spreading purposes. Features include full hydraulic operation for both body conveyor and discharge accessories, compartmented body for multiple deliveries, externally operated compartment doors, and an all-welded body with heavy-gauge body hatches.



#### **Dirt Wagon**

THE WEBB CORP., Webb City, Mo., has introduced the 1955 Model 15-cu. yd. dirt wagon, featuring a ball-type hitch to permit the tractor or trailer to be in any position without undue strain on the tractor or dirt wagon. The doors are cable-operated and actuated by a hydraulic cylinder which is controlled from a valve located in the tractor cab. The doors may be opened to various positions, and closed

at any time whether the wagon is moving or stationary. The hydraulic valve is set in dump position for instantaneous dumping.



#### **Two-Way Radio Unit**

GENERAL ELECTRIC Co., Syracuse, N. Y., has added a 25-watt mobile combination transmitter-receiver to its line of two-way radio communication equipment. It is designed to operate from either a 6 or a 12-volt battery interchangeably. Should crowded radio channels cause a change in operating channel width, the unit may be converted to split channel operation with no new parts or components necessary. The 25-watt model replaces two previous 10-watt units, is identical in size to the former units, and can use the same base or mounting plate. If desired, the 25-watt unit may be adjusted to 10-watt output.

#### **High Strength Wire Rope**

JOHN A. ROEBLING'S SONS CORP., Trenton, N. J., has announced a line of wire rope with steel cores, which is claimed to have 15 percent greater strength than the strongest grade thus far available. High bending and abrasion resistance are also claimed for the rope, which is manufactured primarily in preformed constructions. Rope sizes are available ranging from ½ to 3½ in., for use on shovels, draglines, wagon-scrapers and earth-moving equipment, as well as rotary rigs, cranes and dredges.

#### **Rubber-Hose Conveying**

B. F. Goodrich Co., Akron, Ohio, has introduced a rubber hose, known as "Convertapipe," for conveying sand and gravel, ground or powdered chemicals and a variety of sharp and abrasive materials from the mine to processing plant and through various processing operations. It is said to handle chunks up to 10 lb. and 8 in. long, carrying the material in a stream of water at pressures as high as 250 p.s.i. A special rubber compound called

Armorite is used to manufacture the inside of the rubber hose tube. The hose may be used to advantage wherever a metal pipe system is being used and it must turn a corner or negotiate a bend. Short lengths of hose can flex around the corners, and, unlike curved pipe, can be rotated to distribute the wear at these points. The hose is available in sizes from 1 to 14 in., and in constructions for working pressures from 50 to 250 lb. An interior spiral wire reinforcing is used to prevent kinking, crushing and collapsing.



#### **Even-Flow Screen**

SIMPLICITY ENGINEERING Co., Durand, Mich., has announced the availability of the W-deck screen on its gyrating screens. The screen is said to permit a more even flow of material across the screen surface, utilizing more screening area, and providing even wear. The screen features side and center tension take-up only. Maximum opening utilized on the screen is 2 in., and maximum wire size, ¾ in.



#### **Viscosity Conversion Chart**

Nopco Chemical. Co., Dept. VC, Harrison, N. J., has released a chart for translating viscosity measurement into seven other standard units. The conversion nomograph is designed to minimize problems caused by the lack of standardization by providing a means of converting from one system to another. It is available free of charge from the company.



Partable crushing and screening units in flowsheet: (A) the 36-in. belt conveyor from surge pile; (B) a 4- x 12-ft. screen, oversize to 40- x 24-in roll crusher; and (C) a 4- x 12-ft. screen with the oversize going to a hammer mill

# Meeting Tough SPECIFICATIONS For Oahe Dam Aggregates

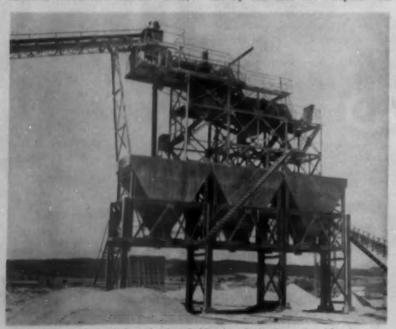
 L. G. Everist, Inc., supplying four sizes of coarse aggregates and sand for Oahe Dam on the Missouri River near Pierre, S. D.
 Use portable crushing and screening units with permanent plant equipment to produce materials

By WALTER B. LENHART

OAHE DAM, the world's second largest dirt fill dam, is now under construction across the Missouri river,

near Pierre, S. D. During 1954, construction increased in tempo but the activity still does not compare with construction speeds of other dams completed, or nearing completion on the "Big Muddy." Ft. Peck on the upper Missouri is the largest of the dams with a total of 120,000,000 cu. yd. of dirt fill. Oahe will have 78,000,000 cu. yd. of dirt fill and will require 1,065,000 cu. yd. of concrete for the spillway, outlet works and power plant. The dam is scheduled to be finished in 1950.

Gavin's Point dam farther down stream on the Missouri, and the farthest down stream of all the big dams which are a part of the Pick-Sloan plan, is rolling along in high gear. It is one of the smaller dams and, according to estimates, will be completed within two years. Gavin's Point dam is below Ft. Randall dam and near Yankton, S. D. Garrison dam in North Dakota and Ft. Randall dam are in the final construction stages. Rock PRODUCTS published descriptions of Garrison dam in the November, 1951, issue covering the coarse aggregate production by the J. L. Shiely Co. plant at Greene, N. D., the rip-rap recovery system of Peter Kiewit Son's Co., near Elgin, N. D. and the sand operations of the Becker County Sand & Gravel Co., Detroit Lakes, Minn.



Two acreens are located above the three holding bins for loading railroad freight cars

These companies all contributed aggregate to Garrison dam. A second article on recovery of sand adjacent to Garrison dam whereby lignite coal was removed, appeared in Rock Products, October, 1953, p. 86. The Ft. Randall dam, including several plants that supplied sand, and the coarse crushed rock aggregates was described in the October, 1951, issue of Rock Products.

Aggregates, both coarse and fine, for Gavin's Point and Oahe dam, are being supplied by L. G. Everist, Inc., of Sioux Falls, S. D., as the prime contractor, with the Hallett Construction Co., owners of the Becker Sand & Gravel Co., as a sub-contractor supplying sand for Oahe from a newly constructed plant near Watertown, S. D.

The Deister super-sorter for preparing a graded sand to adequately meet the rigid specifications of the Corps of Engineers, according to reports, was moved from the Detroit Lakes plant of the Becker Sand and Gravel Co. to the new Watertown, S. D., sand plant by the Hallett interests. The super-sorter is the only machine of its type in operation west of the Mississippi river and one of the few in the United States. It prepares several sizes of washed sand continuously in controlled amounts and the many sizes can be blended to meet the specifications required.

Fine aggregate for Gavin's Point dam is being supplied from the Hawarden, Iowa, plant of L. G. Everist, Inc., with the coarse aggregate from the company's Dell Rapids, S. D., Operation.

Oahe dam is only a few miles from the exact geographical center of North America and, strange as it may seem, the geographical center of South Dakota is only a few feet away from the center of North America. From Oahe to Rapid City is 184 highway miles. From Pierre to Watertown is 199 miles and from the damsite to Del Rapids is approximately 230 miles so that freight charges are \$1.97, \$2.19, and \$2.37 plus a 3 percent tax for the respective hauls. These freight hauls are necessary because closer to Oahe there is said to be no suitable aggregate acceptable to the U. S. Army, Corps of engineers, which is carrying out the construction program.

One common characteristic of the coarse aggregate found in the bottom land, or immediately adjacent thereto, of the Missouri river from near Bismarck, N. D., to Sioux City, Iowa, is the presence in the material of the so-called "chocolate drops." This is an iron-manganese nodule that disintegrates on exposure to the atmosphere. The inside of the nodule is a soft, light



Batching plant at dom employs two 2-cu. yd. mixers. Coarse aggregate stored to right

colored material. The exterior is a red to deep brown color and usually quite smooth. It obviously is an unstable aggregate. Smaller fragments of the shell of these nodules contaminates the sand. Lignite coal is also often present in some of the sand. Adequate processing is a challenge to the ingenuity of producers.

#### **Quarry Operation**

The new plant of L. G. Everist, Inc. is located about five miles northwest of Rapid City, S. D., and adjacent to tracks of the Chicago and Northwestern Railway. Several other rock products operations are bunched in the same general area, including the stateowned portland cement plant. The rock being processed is a relatively hard, high calcium limestone, a typical analysis of which is as follows:

CaCO <sub>3</sub>	96.2 percen		
MgCO,	1.1		
SiO <sub>z</sub>	1.7		
Al <sub>2</sub> O <sub>3</sub>	0.7		
Fe <sub>z</sub> O <sub>3</sub>	0.3		
	100.0		

It is classed geologically as the Minnekata limestone and appears as a wide band that practically circles the Black Hills.

Primary drilling is done with a

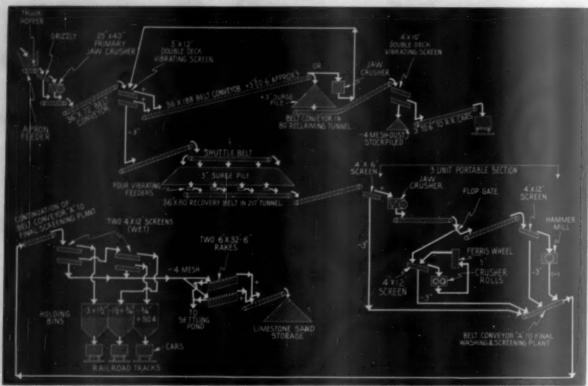


Drill on truck drills a 5%-in, hole at a rapid rate

Mayhew rotary drill mounted on a Euclid truck. The drill puts down a 55%-in, dia, hole. It operates dry, Primary loading is done with a 2-cu, yd. 38-B Bucyrus-Erie shovel, with a fleet of Euclid rear dump trucks hauling to the plant. Stripping is not important and the haul to the plant is less than 500 't. over easy grades. Quarrying is



A 6-in. pump, driven by a diesel engine, pumps water through 8-in. spiral wound steel pipe to crushed stone washing plant



Flowshoot of crushing, screening and sand recovery operations

conducted from a 24-ft. face with Hercules powder and delay caps being used for primary blasting.

#### Crushing, Washing, Screening

The plant produces four sizes of crushed and washed limestone with two surge piles following the primary crusher. Final crushing is completed in a 3-unit, Cedarapids portable plant that has been permanently mounted and attached to which is the permanent, final screening section, operated wet. Finished material is loaded direct to open top gondolas as fast as it is produced, however, there are three small steel holding pockets over the three parallel loading tracks so that production can continue while cars



Near Oake Dam, Pierre, S. Dak., is this sign which marks the center of South Dakota and also center of North America

are being shifted. The holding bins were supplied by the Missouri Valley Steel Co., Sioux Falls, S. D., and the car-puller is a 7½-hp. Silent Hoist & Crane Co. unit. Limestone sand is recovered in two 8- x 32½-ft. duplex rake-type dewaterers that were made by the company. A 6- x 10-ft. peripheral discharge Marcy rod mill is interposed in the sand circuit mainly to improve gradation. The plant has a capacity of 250 t.p.h. Plant design and engineering for this operation was done by Chas. W. Jones, Los Angeles, Calif.

The section of the operation ahead of and including the surge pile is quite novel. After leaving the 25- x 40-in. Cedarapids primary jaw crusher, the material is sized on a 5- x 12ft. Allis-Chalmers Ripl-flo two-deck screen, operated dry, to make a minus 3-in. product. This material is carried by a belt conveyor inclining up to a shuttle belt that operates in a steel gallery over a 217-ft. reclaiming tunnel. This pile has a total capacity of 32,600 tons with a live capacity of 15,500 tons. The plus material from the Ripl-flo (mostly 3 to 6 in.) is moved by belt conveyor to a second surge pile built over an 8-ft. dia. Armco steel pipe reclaiming tunnel that is 80 ft. long or crushed to minus 3 in. in a jaw crusher. Crusher discharge is returned to Ripl-flo screen, closing the circuit. This pile has a

total capacity of 7900 tons and a live storage capacity of 3400 tons. Reclaimed material from the latter surge pile goes to a 4- x 10-ft. Allis-Chalmers, two-deck screen that will make a 3- to 6-in. stone which is loaded direct to cars. The minus 4-mesh dust is stockpiled. The main belts in this section of the plant are 36 in. and ride Robins idlers.

The primary crusher is fed by a Telsmith apron feeder with an F-86-D Syntron vibrating grizzly ahead of the jaw crusher. Under the jaw crusher is a short belt conveyor that receives the impact of the falling crushed stone. This belt deposits the material onto Belt No. 2 (36 in.) at speeds in r.p.m. that are equal so as to minimize wear on the larger belt.

The four sizes of crushed limestone produced conform to the older Corps of Engineers, U. S. Army, specifications which are: 3 in. to 6 in.; 3 in. to 1½ in.; 1½ in. to ¾ in.; and No. 4 to ¾ in.

The minus 3-in. stone in the larger surge pile is reclaimed by four, heavyduty Syntron vibrating feeders that serve a 36-in. belt conveyor which delivers the material to the first screen in the 3-unit, Cedarapids portable section of the plant. In the order of use there is a 4-x 6-ft. single-deck screen with oversize going to a 1036 jaw crusher. A flop gate following the jaw crusher can send the throughs of the

crusher to either a 4- x 12-ft. singledeck screen followed by a 4033 hammermill, or to a second 4- x 12-ft. single-deck screen in circuit with 4024 roll crusher. A ferris wheel returns the roll crusher product to the 4- x 12-ft. screen ahead of the rolls. Portable units will be replaced with a 5x 12-ft. screen and 41/4-ft. cone crusher. All minus material from the screens and the throughs of the hammermill are delivered to a long inclined belt serving the final washing and screening operations. This section of the plant uses two 4- x 12-ft. Cedarapids double-deck screens with the sized and washed stone falling to cars, or to the holding pockets previously mentioned. Ground stored material is reclaimed with a 22-B Bucyrus-Erie clamshell.

Water for the plant is secured from a pond, using a 6-in. Dayton-Dowd centrifugal pump driven by a D-13000 Caterpillar diesel through "V" belt drives. An 8-in. dia. spiral wound steel pipe delivers water to the plant. Rejects from the sand recovery section (tailings) are impounded nearby. The remainder of the plant uses purchased electric power with a bank of Mallory transformers installed near the loading plant.

The main offices for L. G. Everist, Inc. are at Sioux Falls, S. D. L. Garland Everist is president, and R. A. Everist is general manager. George Wood is general superintendent. Mr. Wood was formerly superintendent of the company's Hawarden, Iowa, sand and gravel plant.

#### **Handling Aggregates At Dam**

The aggregates on arrival at Oahe damsite are unloaded direct to Euclid trucks. The cars are spotted over a trestle and the trucks load from below. A Robins car "Shake-Out" speeds up the unloading operation. The haul from the unloading pocket to the batching plant is about a mile. The different sizes of aggregate are stored over a reclaiming tunnel that serves the Nobel batching plant. In the plant are two 2-cu. yd. capacity Smith mixers. The batching plant features the use of Clegg Engineering Co. recorders. This unit has two needles for the sand, water, and cement, and one needle for the ¾-in., 1½-in., and 3in. stone. At the time of inspection no 3-in. to 6-in. stone was being used.

The only important specification change for the aggregates is that the gradation must be met as the aggregate enters the mixer. The sand specifications have been modified slightly and are as follows:

Mesh	Percent Passing		
4	95-100		
8	80-90		
16	55-75		



"Shake-out" at car unloading point at Oahe Dom. Bottom-dump haulage units are driven under trestle to receive the aggregate and haul it to the concrete batching plant

30	30-60
50	12-30
100	314-10

There is no specification for 200 minus mesh or pan. F. M. is 2.40 to 2.90 and tolerances have been broadened from 0.10 to .15 on nine out of ten samples.

#### Work Involved In Project

The upstream half of the tunnels for the outlet works on the west banks of the river is under contract, with Mittry Constructors being the prime contractors. Lytle & Greene have the dirt moving contract. The stilling basin and power house contracts have not been let.

There are at present 14 tunnels planned for the project. Six are for flood control works, seven for power development, and one for use by the Bureau of Reclamation. The number and size of power tunnels has not yet been definitely determined nor is it definite that the Bureau of Reclamation will use one tunnel. The flood control tunnels are 19 ft. 9 in. in diameter. It is proposed to drive the 19-ft, tunnels with a tunnel-driving machine that is a Mittry development, designed on the principle of a coal cutter. The machine will cut through the relatively soft shale at one pass leaving a circular opening. As the shale weathers rapidly, specifications require it to be covered with a bituminous surface within two hours after exposure. Power for the work at Oahe is obtained from two twin diesel-elec-

At the time of the 1954 inspection, reinforcing steel and forms were being placed for the up-stream approaches to the outlet works and one novel feature here was the use of a "Mittry" hook for handling the various items being placed. The hook on the lifting line of the crane is opened and closed

by a small air cylinder attached to the hook. Control centers in the cab. A small air cylinder is mounted on the boom of the crane. The hook has safety features that prevents it from being opened or closed while loaded. Blaw-Knox forms are used at this site.

John Sibert is area engineer for the Corps of Engineers, and L. G. Leavitt is assistant area engineer. M. R. Smith is concrete technologist, and formerly was in charge of concrete work at Garrison dam. A. F. Arrington is resident engineer on Stage 1, outlet works, and L. R. Christ is resident engineer on Stage 3, earthwork.

#### **Canadian Cement**

CANADIAN PORTLAND CEMENT Production during the first nine months of 1954, amounted to 16,952,936 bbl., as against 16,641,682 bbl., for the same period in 1953, as reported by the Dominion Bureau of Statistics. Cement production in September, 1954, totaled 1,992,085 bbl., compared to the September, 1953, figure of 1,922,-704. Shipments for the nine-month period in 1954, were up to 17,453,637 bbl. from 16,835,939 bbl., shipped during the corresponding period of 1953. During September of 1954, shipments totaled 2,064,267 bbl., against 2,209,399 bbl. for the same month in 1953.

#### **Potash Project**

FREEPORT SULPHUR Co. of New York, N. Y., and Pittsburgh Consolidation Coal Co. of Pittsburgh, Penn., are considering joint potash operations east of Carlsbad, N. M. Plans are for a \$15,000,000 potash mine and refinery, capable of producing 240,000 tons of potash annually. Construction would begin in 1955, taking an estimated two years for completion.



Fig. 5: One of the modern cement plants in Mexico where production has been increased

# **Mexico Improving Cement Quality**

By FEDERICO BARONA de la O

 Production at 18 cement plants in Mexico increased to fifteen million barrels per year. New specification governing five types of cement controls SO<sub>3</sub> content

A DDITIONS AND IMPROVEMENTS are constantly being made in the 18 Mexican coment plants with the result that the annual production capacity has increased from 2,000,000 bbl. in 1940, to 15,000,000 bbl. to date. Quality and specifications for the Mexican cement have been improved with the gain in production and installation of modern and efficient equipment.

At the beginning of 1953, the specification for portland-pozzolan cement was rewritten (see Rock Products, August 1953, see also Rock Products, April 1950).

Early in November, 1954, the clause that regulates the SO<sub>2</sub> content in the five types of portland cement was changed to read as follows:

Chause (a): relative to SO<sub>0</sub> in all the five types of portland cement: standard, modified, high early strength, low-heat and sulfate resistant. (Specification DGN-C-1-154)

(a) The SO, content will be regulated.

at the manufacturer's option, by any one of the two procedures expressed below; except when by mutual agreement between the manufacturer and the buyer, one of such procedures is stipulated.

): "0.8 percent, 8 percent, and 1800 sq. cm/g. are considered the minimum values of major influence, respectively, for: Sodium oxide plus 0.658 times potassium oxide, tricalcium aluminate content, and specific surface (Wagner). The maximum limits for the sulfur-trioxide content in any cement, are 2.5, 3.0, 3.5, and 4.0 percent. respectively, when the cement exceeds: none, one, two and three minimum values of major influence. The minimum limit is equal to the maximum limit, as above, less 1 percent."

(The SO<sub>a</sub> limits in the present specification (1954) are 0.5 percent higher than those in the 1948 issue).

Note: The wide range (1 percent of SO<sub>a</sub>) allowed between the maximum and the mimimum limits, is intended not only to provide allowance in the manufacturing operations; but mainly to enable the manufacturer to select the most appropriate or optimum SO<sub>a</sub> content for the particular type and composition of the cement; with the understanding that within each classification cements that present higher values of influence (specific surface, tricalcium aluminate and especially alkalies) require more gypsum; that is, the maximum SO, limit corresponding to the cement classification should be approached; and inversely, cements that present lower values of influence require less gypsum, and the minimum limit of SO<sub>a</sub> corresponding to the cement classification, should be approached.

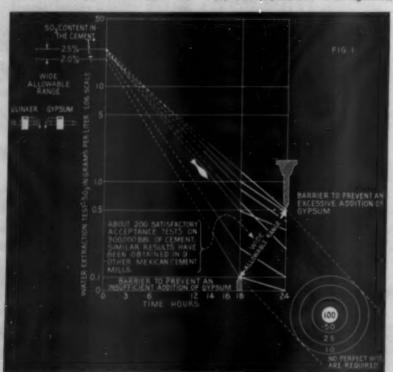


Fig. 1: Graph showing how Atexican coment plants meet new specification covering water extraction SO<sub>0</sub> limits. Values corresponding to 300,000 bbl. of portland cement (Type II, 1640 cm<sup>2</sup>/g., 4.5 percent C<sub>p</sub>A, 0.5 percent alkali) produced in cement plant in northeastern Mexico. (Test similar to A.S.T.M.,—C-265-54T)

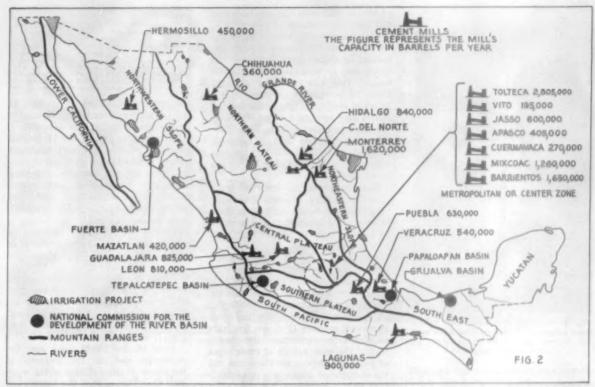


Fig. 2: Map showing location and capacity of coment mills in Mexico and some of the irrigation projects and physical characteristics

(2): In the SO<sub>2</sub> water extraction test, the values obtained should be: at 18 hr., not less than 0.1 gr. per liter — at 24 hr., not more than 0.5 gr. per liter.

According to Mexican practice, for the last three years on an average, 10 cement mills have been providing cement for the Mexican Reclamation works that complies with the water extraction test limits indicated in the specification.

With some careful procedures by the cement plant chemists, using appropriate weighing devices, such as Poidometers or Weightometers, and even disk-feeders (properly controlled) in one or two of the smaller plants, fulfillment of the specification has not been difficult, since the water extraction SO<sub>a</sub> limits correspond to an approximate range in the SO<sub>a</sub> content of the cement, of 0.5 percent; that is 0.25 percent above, and 0.25 percent below the target intended. This is shown graphically in Fig. 1.

If the general recommendation expressed in the "Note" below alternative (1) in the specification is considered, the two alternatives of clause (a), correspond quite well, one with the other.

#### **Use of Cement in Mexico**

Early in the century, concrete was first used in the water supply system for Mexico City and has since become one of the country's most important building materials. It has been used satisfactorily in buildings, pavements, hydraulic structures and large dams.

The ready-mixed concrete industry is now in its early development stage, but as it represents a definite improvement in the quality and uniformity of the concrete for many jobs where

Fig. 3: Views showing how irrigation ditches are lined with concrete and the finished job

Table 6: Coment Kilns in Mexico

	Number				Capacity in bbl.		
	of Kilns			Por	Day	Total Annual	
		Diameter	Length	per kiln	Total	(300 working days	
-Wet Process	1 1 8	8 8 11	260 330 350	906 1,500 2,100	900 1,500 5,300	270,000 480,000 1,890,000	
-Dry Process	(Lepol) 2 2 1 1 6 2 7 5 8 4 1 2 1 2 2	9 7 6 9 7 7 8 6 8 8 9 10 8 9,5	99 100 120 125 178 125 135 150 175 200 270 285 300	1,200 300 325 900 500 900 606 400 650 700 900 1,800 1,200 1,200 1,800	1,200 1,200 650 1,800 500 900 3,600 800 4,550 2,700 7,200 1,200 3,600	340,000 340,000 195,000 540,000 150,000 270,000 1,080,000 240,000 1,085,000 1,086,000 360,000 360,000 360,000	
Total	50	10	375	2,100	2,100	14.580.000	



Fig. 4: Concrete pavements laid on the poor subgrade of Mexico City have seen satisfactory service for more than 21 years in the capital city

proper equipment and other facilities are not economically attainable, rapid growth is expected.

There are many concrete products plants manufacturing block, asbestoscement pipe, roofing tile, and sewer and culvert concrete pipe.

As shown in Fig. 2, Mexico has an area only one fourth that of the United States. About 83 percent of the total area is arid or semi-arid which prevents any extensive agriculture except in those sections where dams and canals have been construct-

ed to use efficiently the scarce water that may be available.

In a country with limited hydraulic resources, like Mexico, it is very important to reduce to a minimum the losses due to seepage along unlined canals. This loss of water averages about 25 percent of the total intake. In other words, the loss in the unlined canals may account for one-fourth of the large investment required to construct the irrigation works. Therefore, in many cases it is necessary to provide a concrete lining, Fig. 3, for the main canals.

High mountain barriers that separate the central plateaus from the Gulf and the Pacific seaboards, have to be crossed in many places in order to provide proper railroad and highway communications.

Mexico City, the center of economic and government activities, with a population of 3,000,000 people, lies over an unstable subsoil, on which only the hydraulic concrete pavement, adopted 21 years ago and used on the most important avenues (Fig. 4), has been satisfactorily supporting the heavy traffic. The early failure of other types of pavement impose the large cost and the nuisance of continuous reconstruction and maintenance.

DRYING SHRINKAGE — When extensive areas are to be covered with concrete, like pavements and linings of hydraulic works, it is important to reduce to a minimum the drying shrinkage and therefore the tendency to crack, the spacing of contraction joints, and the expense involved in reinforcing steel.

The above constitutes one of the main reasons for the present clause in the specification intended to provide

Table 8:	Percentage of
Afkalles Content	total tonnage
(NasO - 0.658 KsO)	produced.
Below0.60 percent	61 percent
Between 0.61,0.65 percent	13 percent
Total below0.65 percent	74 percent
Between 9.66, 0.80 percent	14 percent
Total below 0.80 percent	88 percent

the optimum addition of gypsum to the cement, and therefore reduce the drying shrinkage of the concrete.

As shown in Fig. 2, the 18 cement plants in Mexico are well dispersed to cover the intensive program of construction for the country, including highways, reclamation and power works, air and seaports, industrial plants, buildings, housing projects, schools, etc.

Present total capacity amounts to 15,000,000 bbl. Tonnage produced in 1954 is estimated at about 12,000,000 bbl.

There are three wet process plants, 14 dry process, and one plant produces portland-blast furnace slag cement, that was used in the Mexican part of the International Falcon Dam, Fig. 7, across the Rio Grande.

Four of the plants burn gas; the remainder fuel oil. The majority of the plants produce clinker of the modified type; that is, they use hematite to facilitate burning and to reduce C<sub>2</sub>A. It is gratifying that the largest proportion of the cement produced in Mexico has a low alkali content, as shown in Table 8.

Table 6 shows the characteristics of the 50 kilns that produce cement for Mexico's development.

#### **Concrete Proportioning**

THE NATIONAL SAND AND GRAVEL AND READY MIXED CONCRETE ASSOCIA-TIONS have published a booklet entitled "Calculating the Proportions for Concrete." The publication consists of N. S. G. A. Circular No. 58, and N.R.M.C.A. Publication No. 52, and illustrates calculations which demonstrate basic principles involved in the selection of concrete proportions. A brief history of the development of proportioning procedures is given, and tables provide data on preliminary design. The booklet is available from N.S.G.A., at 1325 E Street, N. W., Washington 4, D. C.

#### Concrete Strength Report

THE NATIONAL SAND AND GRAVEL ASSOCIATION has prepared a report of tests conducted to determine the effect of crushed particle content in coarse aggregate on the flexural strength of concrete. Average characteristics of the concrete and results of the strength tests are given. The report is available from the association at 1325 E Street, N. W., Washington 4, D. C.



Fig. 7: International Falcon Dam over the Rio Grande River. To the left may be seen the Mexican power plant; center, lifts for the spillway gates in the United States; and to the right, the Mexican inlet works. Portland-blast furnace slag coment was used in the Mexican part of the dam



Looking down the famous three-lane Biscoyne Boulevard in Miami, Fla., showing many of the hotels which housed delegates to the conventions and where some of the meetings were held

# Sand and Gravel Producers Take Steps to Protect Future Business

 Convention sessions of N.S. & G.A. at Miami, Fla., stress public relations, selling techniques, production and the labor problems of the sand and gravel industry

R EGISTRATION for the thirty-ninth annual convention of the National Sand and Gravel Association and the Silver Anniversary Convention of the National Ready Mixed Concrete Association, held January 9-13 at Miami, Fla., was approximately 1800 to establish an all-time record for a non-exhibit year.

The convention sessions were preceded by two days of committee meetings and by separate meetings of the two boards of directors and their combined luncheon meeting. All the regular sessions were held in the Miami Auditorium. There were four joint sessions for the two associations, and three separate sessions for each association.

Other sessions included the annual luncheon meeting of the Manufacturers Division, a conference of executives of State and area associations for the two industries and, a breakfast meeting of the Ohio Ready Mixed Concrete Association. A joint lunchcon for both associations was held and a Silver Anniversary Dinner in commemoration of the 25th year of the National Ready Mixed Concrete Association

Louis Schilling, Miami, presidentelect of the National Ready Mixed
Concrete Association was chairman
of the local convention committee.
The majority of producers were housed
in hotels in the immediate vicinity of
Miami Auditorium. A hospitality hour
was arranged at the McAllister so that
all in attendance might gather in the
early evening to become acquainted
and meet friends. A list of associate
members and their hotel location was
handed each producer as he registered
in order to facilitate their getting together to discuss industry problems.

The large attendance reflected the growth of the two associations. At the

end of 1954, the National Sand and Gravel Association had 251 active members representing more than two-thirds the national tonnage of commercial sand and gravel. This compares with 180 in 1947. Income has more than doubled. National Ready Mixed Concrete Association had 639 active members from 47 states, all the territories and 12 foreign companies. There were 99 associate members,

The two associations will hold their biennial exposition and convention February 13-17, 1956, at the Conrad Hilton Hotel, Chicago, Ill., the week preceding the convention and exhibit of the National Crushed Stone Association. In 1957, the two associations will meet February 11-14 at Hotel Statler, Los Angeles, Calif.

Tentative arrangements are for the 1958 biennial exhibit and convention to again precede immediately the National Crushed Stone Association ex-

hibit and convention February 9-14 at the Conrad Hilton, Chicago. Due to the continuing strong pressure by machinery manufacturers for larger exhibit facilities to accommodate heavy machinery there is strong possibility that the arrangement for the 1958 exhibit and conventions may be changed to a city with auditorium exhibit facilities. That decision will be made at the 1955 midyear meeting of the two boards of directors. Should the decision be made to change to an exposition outside the convention hotel, it will very likely mean the end of the arrangement whereby these two associations meet the week preceding the National Crushed Stone Association convention and exposition.

The 1959 conventions (no exhibit) are scheduled for February 15-19 at the Roosevelt Hotel, New Orleans, La. Meetings of the boards of directors are scheduled for September 25-29, 1955, at The Homestead, Hot Springs, Va., and will be held in 1956 at the Lake Placid Club, New York State. The dates of October 1-3 are tentative.

Reports of special interest to the sand and gravel industry are published in this issue of Rock Products as are some of the presentations of interest to both industries and given in joint sessions. Papers of special interest to the ready-mixed concrete industry are summarized in the Concrete Products section of this issue of Rock Products.

#### Officers

Officers of N.S.G.A. for 1955 are those who held office in 1954. John W. Murphy, Union Sand and Gravel Co., Spokane, Wash., is president; R. E. Weaver, Lincoln Sand and Gravel Co., Lincoln, Ill., is vice-president; and E. Phil Gemmer, Texas Construction Material Co., Houston, Texas, is secretary-treasurer.

J. Paul Calhoun, Consolidated Gravel Co., Columbus, Ga., was elected to the executive committee to fill the vacancy when Robert H. Baker resigned. Harold E. Bender, Azusa Rock and Sand Co., Azusa, Calif.; E. K. Davison, J. K. Davison & Bro., Pittsburgh, Penn.; and Howard W. Jordon, Metropolitan Sand and Gravel Corp., Port Washington, N. Y., complete the executive committee.

Officers and members of the board of directors for 1955 are as follows: Lockard J. Allen, Minneapolis, Minn.; Robert H. Baker, Chattanooga, Tenn.; C. A. Barinowski, Birmingham, Ala.; Robert S. Barneyback, Oakland, Calif.; Fred E. Bellamy, Cedar Rapids, Iowa; Harold E. Bender, Azusa, Calif.; Theodore M. Bowers, New Martinsville, W. Va.; Daniel J. Boylan, Cambridge,

Mass.; Charles E. Brady, Lilesville, N. C.; Lloyd S. Brannan, Denver, Colo.; Edmond F. Brovelli, Napa, Calif.: J. Paul Calhoun, Columbus, Ga.; C. A. Chipley, San Antonio, Texas; Irving Crown, Chicago, Ill.; Fred P. Curtis, Omaha, Nebr.; E. K. Davison, Pittsburgh, Penn.; William J. Doyle, Jr.; Tulsa, Okla.; E. Phil Gemmer, Houston, Texas; Eric A. Goodman, Jr., Lilesville, N. C.; James A. Hart, Chicago, Ill.; Chester P. Hegan, Louisville, Ky.; Wm. Edward Hole, Greenville, Ohio; Paul F. Jahncke, Jr., New Orleans, La.; Howard W. Jordan, Port Washington, N. Y .: Walter M. Keeler, Wichita, Kan.; M. G. Kerr, Detroit, Mich.; Ezra C. Knowlton, Salt Lake City, Utah; George R. Krom, Newburgh, N. Y.; J. Henry Law; Daniel J. Miller, Jr., Portland, Penn.; John W. Murphy, Spokane, Wash.; G. G. Robinson, Toronto, Ont., Canada; A. H. Smith, Branchville, Md.; and Roy E. Weaver, Lincoln, Ill.

Honorary members of the board are Fred D. Coppock, Greenville, Ohio, and Nathan C. Rockwood, Naperville, Ill. Representing the Manufacturers Division are R. P. McKendrick, Blawknox Equipment Division, Pittsburgh, Penn., and R. D. Ketner, General Electric Co., Schenectady, N. Y.

#### **Manufacturers Division**

R. P. McKendrick, Blaw-Knox Co., was re-elected chairman of the Manufacturers Division at its annual luncheon meeting. Vice-chairmen, also re-elected, were D. McM. Blackburn, Hendrick Manufacturing Co., Carbondale, Penn.; C. B. Laird, Eagle Iron Works, Des Moines, Iowa; J. C. McLanahan, McLanahan & Stone Corp., Hollidaysburg, Penn.; and W. A. Rundquist, Pioneer Engineering Works, Inc., Minneapolis, Minn.

Re-elected to the board of directors were J. B. Bond, Nordberg Manufacturing Co., Milwaukee, Wis.; Emil Deister, Jr., Deister Machine Co., Fort Wayne, Ind.; John E. Dunn, Allis-Chalmers Manufacturing Co., Milwaukee, Wis.; W. Neil Richardson, The Universal Engineering Corp., Cedar Rapids, Iowa; E. D. Stearns, Barber-Greene Co., Aurora, Ill.; Austin K. Thomas, Chain Belt Co., Milwaukee, Wis.; Ralph B. Utt, Western Machinery Co., San Francisco, Calif.; and Roy K. Wills, Baldwin-Lima-Hamilton Corp., Lima, Ohio.

J. Craig McLanahan and R. D. Ketner were chosen to serve, with the chairman, on the board of the N.S.G.A. and N.R.M.C.A. Much discussion developed on the choice between an outside or inside machinery exposition. The Division added two new members and lost one by resignation in 1954.

#### President's Address

President John W. Murphy, in his address at the opening session of N.S.G.A., paid tribute to the association staff, officers and directors for their support and cooperation in handling association affairs. He summarized the principal accomplishments and those of executive secretary V. P. Ahearn and director of engineering Stanton Walker as individuals during the past year.

Mr. Murphy prophecied that 1955 would be a year of good business for the industry and said that association finances are in the best shape in history to carry on needed work. Membership is at the highest point in history and is representative of 65 to 70 percent of the commercial production in the United States.

Among special accomplishments mentioned were percentage depletion, relief from the renegotiation law, the quarterly wage survey, the conduct of regional meetings, interpretations of tax problems, special meetings designed for accountants on tax problems, the group health and accident program and many others.

Among newer activities will be a study of the depreciation problem jointly with N.R.C.M.A., the recently issued drivers' manual and a program to be undertaken to improve the public relations of the industry. Information on this important subject is to be gathered in order that the association may help individual producers in facing this recurring problem at the local level.

#### Britain's Problem

Speaking before a joint luncheon for the two associations, H. E. Peirce, chairman of the Ballast, Sand and Allied Trades Association of Great Britain spoke on the subject of economic conditions in his country and United States-British relations. This luncheon was attended by 900 and was presided over by Robert C. Collins, president of the National Ready Mixed Concrete Association.

#### **Presiding Officers**

President John W. Murphy presided for the opening N.S.G.A. session where he presented his presidential address and awarded the ROCK PRODUCTS safety trophies. President Robert C. Collins presided for a simultaneous opening session of the N.R.M.C.A. Presiding officers for other N.S.G.A. sessions included Louis P. Struble, Jr., and E. K. Davison; for N.R.M.C.A., Wm. J. Hicklin, Jr., and Quentin W. Best. Presiding officers for the joint sessions were Robert Mitchell, J. Rutledge Hill, Norman J. Fredericks and E. Phil Gemmer.

#### **Executive Secretary's Report**

Executive secretary V. P. Ahearn summarized the outlook for business and the more important current activities of the two associations in his annual report prepared for joint presentation.

He commented on the construction picture which he predicted will reach an all-time high of \$391/2 billion for new construction in 1955, a 7 percent increase over the 1954 record-breaking volume. The extent of activity in the various types of construction was given in detail, and he called attention to staggering backlogs of unfulfilled construction that still exist.

Sand and gravel production in 1953 was estimated at 457 million tons valued at \$371 million. The estimate for 1954 is 479 million tons valued at \$389 million. Both these estimates are modest figures and may actually be larger. Commercial production was estimated at 316,800,000 tons and 332 million tons valued at \$.98 a ton for the two years, respectively. According to the association's survey returns, 61 percent of commercial sand and gravel was transported in trucks and railroads now handle only 28.4 percent. The ready-mixed concrete industry takes 31 percent of the output.

The study for the ready-mixed concrete industry, with 1013 companies reporting, revealed that they produced 53,404,513 cu. yd. in 195% at an average value of \$11.92 per cu. yd. These companies used 71 million bbl. of cement, 52,452,610 tons of coarse aggregate and 36 million tons of sand. The great bulk produced less than 30.000 cu. yd.

The strike in eastern cement mills and large construction projects were mentioned as responsible for serious cement shortages in 1954. As a whole, there was sufficient cement over the United States except for such regional shortages.

Mr. Ahearn commented in some detail on taxes, recent developments in percentage depletion, the association tax conference held in Chicago late in 1954, industrial radio, the merchandising program of the two associations, employer-employe relations and safety.

Both industries are now exempted from renegotiation. Percentage depletion continues at 5 percent under provisions of the Revenue Act of 1954. In a recent revision of the FCC, the eligibility of ready-mixed concrete for industrial radio was improved. The restriction against industrial radio operations in standard metropolitan areas has been eased upon a showing that "transmitting equipment will in fact be used in an area of low density population removed from the urbanized sec-



John W. Murphy, president of N.S.G.A., to the left; E. Phil Gemmer, secretary-treasurer, center; and R. E. Weever, vice-president, to the right

tions of the standard metropolitan area involved." Where eligibility rules now disqualify industrial radio because of the population limitation, producers may continue to operate for five years from the effective date of the rules in order to amortize their equipment investment. Some sand and gravel producers have qualified for industrial radio but, in general the industry is disqualified because its products are not "perishable" like ready-mixed concrete. If an operation may qualify as a "mining activity" it is possible to use industrial radio.

The associations have been extremely active in all the foregoing mentioned activities and will continue to press the case for industrial radio in the sand and gravel industry.

Mr. Ahearn told of the harmonious relations between the N.R.M.C.A. and the Portland Cement Association in their joint program to help producers merchandise a quality product. Promotion aids of high caliber and the

film "Quality Ready Mixed Concrete" have resulted through this joint effort.

The N.S.G.A. is working toward taking over the conduct of its own safety contest in order to improve participation. It presently is conducted by the U.S. Bureau of Mines. In the ready-mixed concrete competition by the N.R.M.C.A., there will be four group classifications in the future, winners of which will receive trophies from *Pit and Quarry*. A new Drivers' Manual for the sand and gravel industry, similar to the one put out a year ago for the ready-mixed concrete industry was discussed by Mr. Ahearn and presented at the convention.

Mr. Ahearn touched upon the tightening competitive situation and said that 1955 will be a year of great challenge to good management. He also discussed the seriousness of the exhaustion of reserves of deposits and the growing problem of zoning restrictions which will, in the future, result in greatly increased costs.

### Safety Award Winners

WINNERS OF THE N.S.G.A. SAFETY CONTEST for 1953, in the competition conducted by the association in in cooperation with the U.S. Bureau of Mines, were awarded the ROCK PRODUCTS safety trophies by president John W. Murphy at the opening session of N.S.G.A. Following presentation of the trophies, a representative of each winning company discussed safety policies of his company.

The Eliot No. 104 plant of Pacific Coast Aggregates, Inc., San Francisco, Calif., was the winner in the class A competition for plants operating more than 100,000 man-hours. J. D. Kaufman, operating manager of the plant, accepted the trophy which was the second consecutive award won.

Mr. Kaufman stressed the fact that safe operation pays dividends, and he emphasized the importance of good housekeeping in maintaining a safe plant. In the event of an injury, it is the practice of the company, whenever possible, to check the case with the physician while the man is still on the job. Many lost-time accidents have been eliminated by this practice. A follow-up after an injury sometimes results in finding it to have been due to an ailment or previous injury.

Mr. Kaufman believes that smaller operations should be given recognition for their fine records. He mentioned his company's Centerville, Calif., plant which has operated 357,386 man-



Left to right: J. D. Kaufman, Pacific Coast Aggregates, Inc., Eliot plant, Pieasonton, Calif.; John W. Murphy, president of N.S. & G.A.; and R. K. Humphries, Pacific Coast Aggregates, Inc., at the presentation of ROCK PRODUCTS

Class A safety award

hours over a 5½-yr. period without a lost-time accident and the Olympia, Calif., plant which had accumulated 83,856 accident free man-hours over a ½-yr. period. Pacific Coast Aggregates has won three trophies and 16 certificates of merit since it entered the competition.

General manager C. E. Marshall, in accepting the trophy for the Quigley plant of Hurst Gravel Co., Fort Worth, Texas, winner in class B for plants working 50,000-100,000 man-hours, gave the credit to production manager Ray Thomas.

This operation has won many safety honors over the years and safety is considered of utmost importance by top management. Regular safety meetings for foremen are held, at which top officials and the foremen discuss safety on an equal level. Bulletin boards with safety boards are extensively used and the services of insurance company safety engineers are drawn on for a great deal of benefit in conducting "safety audits." The stress is on spotting trouble spots. The Quigley plant was built in 1928 and has undergone little change over the years. It is now to be razed and, in its place, will be built a new plant designed for

The No. 7A plant of Lyman-Richey Sand and Gravel Corp., Omaha, Nebr., winner in the 1951 competition in the class C group for plants working less than 50,000 man-hours, was a repeater for the 1953 competition. Safety director Harold Koop accepted the trophy.

Safety must become a habit before

any individual or group can hope to succeed with an organized safety program, said Mr. Koop. The story of the plant's success, he said, was a continuation of the methods developed and used in winning the 1951 trophy.

The company has 11 hydraulic dredge operations in Nebraska, each with a foreman and 4 to 12 men. Supervision is from Omaha where one general superintendent has his head-quarters.

A safety program was formalized in 1933 when the company's insurance was cancelled due to its unfavorable accident experience. There had been 72 lost-time accidents in a period of 24 months.

The alternative was for the company to carry its own insurance, and it set up an organized safety program. A physical examination was required of each employe, membership was taken in the National Safety Council and Mr. Koop was appointed safety director. Then followed inspections at each plant in order to plan a campaign of correction of hazards, bulletin boards were installed and posters put on display, and a system of regular monthly safety meetings and inspections was

scheduled. An inter-plant safety contest was organized with cash awards for the best records annually.

A foreman and key personnel group meeting is held annually in Omaha where discussions are held and cash awards presented. It is customary for the foremen to share these awards with his employes either by cash or with a dinner for employes and their wives.

In the first year of the program there were a total of seven lost-time accidents and that is the most experienced since for any one-year period. A perfect record is the goal. In each of the years 1949, 1951 and 1954 there was a total of one lost-time accident for all operations, meaning that all but one operation had a perfect record.

In 1943, insurance was again taken over by the former carriers with a policy furnished on a retroactive payment plan basis. Substantial savings were made each year as self-insurers and sizeable refunds have been made each year under the retroactive plan. The cost of establishing and maintaining a safety program has proven negligible and the savings are substantial.

### **Construction Outlook**

SPEAKING before a joint session of the two associations on the subject "The Construction Outlook for 1955," Frank J. Rooney, president, Frank J. Rooney, Inc., Miami, Fla., who is vice president of Associated General Contractors of America, Inc., presented figures to show the vital part that construction plays in the American economy.

Construction in 1954 totalled more than \$52 billion of which \$37.2 billion was for new construction and more than \$15 billion for maintenance and repair, according to his figures, and which establishes the ninth year of new volume records. This is an increase of more than \$2 billion over 1953 volume. According to Mr. Rooney, one of every seven dollars is being spent for construction and more than 15 percent of all full-time workers earn their livelihood directly or indirectly from construction.

He touched upon the trend to the suburbs and other factors associated to population growth in their relation to construction, and he itemized percentage increases expected in 1955 for the various classes of construction. His prediction is that there will be \$40 billion of new construction in 1955 and that construction will be increasingly competitive. One of the factors is that there are more and more con-

tractors bidding on construction jobs which will put greater emphasis on cutting costs.

#### **Cement Supply**

Speaking before a joint meeting of the two associations, Joseph S. Young, president, Lehigh Portland Cement Co., outlined the development of the portland cement industry in a paper '25 Years of Post-War Growth for the Cement Industry." Mr. Young told of the contributions of his company's Bunnell plant to the construction industry in Florida and of the current program to increase production. Speaking generally about the cement industry, he said that the industry is in an expansion mood even though tremendous capital outlays are essential.

According to Mr. Young the price of cement was not increased nearly as rapidly as prices of other building materials. Since 1939 the average price of cement has increased by only 72 percent as compared to 156 percent as the composite price for all building materials.

Looking into the future, Mr. Young anticipates an increase in cement consumption of 50 million barrels or 20 percent by 1970. He believes that the industry will find ways to provide the additional capacity to meet the demand.

# President's Highway Program

E ZRA C. KNOWLTON, executive vice-president, Utah Sand and Gravel Products Corp., Salt Lake City, Utah, gave a very thorough and instructive analysis of the present administration's federal highway program, or proposals, which contemplate spending something like one hundred billion dollars in the next 10 or 20 years. Of this total the federal government would be responsible in one way or another for about one-half. At the time Mr. Knowlton assembled his data President Eisenhower had not submitted his specific request for federal financing, so that the paper read at the convention dealt only with prospects based on the reports and recommendations of various interested advisory hodies.

By way of introduction Mr. Knowlton summarized the history of highway construction and improvement during the last 40 years in which the federal government's contributions have steadily increased. His own personal experience covers that period, for he started his career as an engineer with the Utah State Highway Department. Mr. Knowlton divided his subject into seven parts as follows: (1) Milestones in our nation's highway development; (2) highway deficiencies and toll roads; (3) reception to date of President Eisenhower's program; (4) record of the Bureau of Public Roads and State Highway Departments; (5) ability of the nation's economy to adjust to stepped up highwav program; (6) conclusions.

Under the heading "present highway deficiencies," the speaker said that since 1920 cars on our highways had increased 600 percent, and available money for highway construction only 50 percent. Congestion of traffic into and through cities is the most urgent problem, for while urban population increased only 12 percent between 1940 and 1950, suburban population increased six times as much (72 percent). As to toll roads, Mr. Knowlton called attention to the fact that some state constitutions do not now permit bond issues for such purposes. Moreover, he said that "few claim this type of highway development is in itself a permanent satisfactory solution of the traffic problem; rather, it is more in the nature of a temporary expediency."

The reception of President Eisenhower's program to date, Mr. Knowlton said, had been favorable from nearly all quarters. The 1954 conference of the state governors has endorsed the program, with specific recommendations, which will undoubted-

ly have much weight. Among other things the government believed the financing of the program should provide for the interstate system, the urban connections thereto, other federal aid systems, state and local systems. It was suggested that the federal government assume primary responsibility for the interstate system, with state participation, and that credit be extended the states that have constructed, or do construct, satisfactory sections of this system either as public highways or toll roads. The estimated 25 billion dollar cost of this system is to come from the general government revenue, or from bonds, supported by the federal excise taxes on motor vehicles. The federal government should continue federal aid to other types of highways as at present.

The question of the ability of the national economy to absorb such an ambitious highway program was answered by Mr. Knowlton in the affirmative. Quoting a report to Congress in 1944 on Interregional Highways, it was estimated that for a healthful national economy, construction for all purposes should be about 15 percent of national income. In spite of the increased tempo of con-

struction during the past five years this ratio has been nearer 13 percent. [One percent of the present national income is about 3 billion dollars.] The speaker also quoted various authorities to the effect that construction materials and equipment could be supplied to meet the demand, but cement manufacturers would have to step up production and sand and gravel producers would probably have to go farther afield for sources of supply, at greater costs.

Mr. Knowlton's conclusions, based on the authorities referred to above, and others not quoted here, were: (1) Federal funds estimated at 2.5 billion dollars a year for 10 years should supply most if not all construction costs; (2) population should be the chief if not the only factor in apportionment of these funds among the states; (3) ban on federal funds for toll roads should be removed and legislation adopted to provide integration of such roads in the interstate system, with provision for removing tolls when the roads are paid for; (4) keep the present federal excise taxes on motor vehicles and fuels - this revenue to support bonds issued by federal financing authorities; (5) present federal aid to be continued, and sharply increased expenditures by states and local authorities based on local tax increases.

# Tax Planning-Depreciation Labor Costs

Q UOTING from Judge Learned Hand, John T. Sapienza, counsel for the associations, said, "anyone may so arrange his affairs that his taxes shall be as low as possible. He is not bound to choose that pattern which will best pay the Treasury. There is not even a patriotic duty to increase one's taxes." Tax planning therefore is a good thing.

Turning to the subject of percentage depletion, Mr. Sapienza said that the Treasury Department has as one of its topics for full examination in 1955, the taxation of minerals and mining companies, which could include reexamination of percentage depletion, exploration and development expenditures.

On the matter of tax rates, he said that although the Internal Revenue Code of 1954 provided for a reduction of the normal tax rate for corporations from 30 percent to 25 percent on April 1, 1955, President Eisenhower has requested Congress to continue the rate at 30 percent for another year. As Democratic leaders favor this ex-

tension, there should be no reduction in 1955. Therefore there may be no advantage accelerating deductions to 1954 and postponing income to 1955. Mr. Sapienza suggested, however, that a look should be taken at your tax picture to decide whether as many deductions as you can should be taken in 1954 and try to postpone any income you can to 1955.

In tax planning, the question of accelerated payments is important. Mr. Sapienza pointed out that corporations having income tax liability over \$100-000 a year will start making declarations of estimated tax and payments of estimated tax. In 1955, corporations on the calendar year basis are required to pay 50 percent of their income tax in March and 50 percent in June. Had the law remained the same, they would have had no payments in September and December. The new code provides that 5 percent of the estimated 1955 tax over \$100,000 is to be paid in September, 1955, and 5 percent in December, 1955. By 1959 that percentage will be increased to 25 percent in September and 25 percent in December. Acceleration of tax payments, said Mr. Sapienza may raise serious problems with respect to work-

ing capital.

Mr. Sapienza reviewed the percentage depletion picture, pointing out that sand and gravel rates remain at 5 percent, computed by applying the 5 percent to the gross income from the property with a limitation of 50 percent of the taxable income. Taxpayers are still entitled to take the higher of cost or percentage depletion. On the question of treatment processes, some revenue agents have proposed to deduct the cost of drying from gross income and thus reduce the percentage depletion deduction. He said that companies should insist upon its allowance.

There is a new percentage provision related to aggregation of mineral interests. In many cases courts have allowed aggregation of mineral interests located in separate tracts of land, and the new code has a specific provision on this subject, said Mr. Sapienza. Each taxpayer may now elect to aggregate separate mineral interests, whether located in the same tract of land or in noncontiguous tracts, provided these interests constitute part or all of one operating unit.

An operating unit can be several deposits that are operated with one processing plant, with the same or interchangeable equipment, and with the same personnel, in an area that is not too large. Mr. Sapienza suggested that producers might be able to aggregate interests located within the same county, perhaps 10, 20 or 30 miles apart. If a company operates separate minerals interests, it has the right to elect, in the first return under the 1954 code, which of those interests it will aggregate.

He cited an example of a company operating five separate deposits. The producer on the 1954 return could elect to aggregate all five; treat them all as separate properties for percentage depletion; or to aggregate three and treat the other two as separate interests. Should a sixth mineral interest be acquired, in the year it was acquired it could be elected to aggregate it with those already aggregated or treat it as a separate unit. A statement has to be attached to the first return under the 1954 code, stating that the election is made, attaching a map of the property, and giving information to enable the Treasury to tell which units are being aggregated and which are being treated as separate units. Once the election to aggregate has been made, you must continue to treat those units as one until you get permission from the Treasury to change. It is important that a wise se-

lection be made as one mineral interest may be on a high-cost basis and another with a zero basis. It may be to your interest in 1954 to aggregate the two, but in 1957 it may be a disadvantage because at that time you may want to take cost depletion on the mineral interest with the high basis and percentage depletion on the interest with the zero basis. If you have aggregated, you have to continue taking either percentage depletion or cost depletion on the aggregate. In addition, the total percentage depletion allowed on the aggregate is applied against the basis of the high cost interest. If the mineral interest with the high basis is later sold, the percentage depletion allowance will have reduced that basis and the gain on the sale will be higher. The obvious advantage in aggregating interests is in cases where the ceiling of 50 percent of taxable income applies to one interest but not to the other. In such cases, he pointed out, it may be possible to get a larger percentage depletion deduction if the interests are aggregated.

Mr. Sapienza touched upon the subject of exploration expenditures, pointing out that \$100,000 may now be deducted over a period of years for ascertaining the existence, location, extent or quality of a deposit. The

old limit was \$75,000. On the question of depreciation, Mr. Sapienza said that the new provisions are the most important in the Internal Revenue Code of 1954. They were put there for the purpose of encouraging modernization and expansion of plant and equipment. These provisions, however may not always be advantageous. He said that if low profit levels, or even losses, are envisaged during the next few years, accelerated depreciation may do you little good. If the business has a steady level of income, even depreciation deductions may be preferred. Mr. Sapienza also covered the question of "reserve for estimated expenses" for those who are accrual basis taxpavers. If you are on the accrual basis, and not on a cash basis, you can elect to set up a reserve for such items as cash discounts, freight allowances, sales returns, vacation pay and self-insurance. That means that you could take a deduction in 1954 for expenses actually incurred in 1954 for those items, plus a deduction for a reasonable addition to a reserve for expenses expected to be incurred in 1955 and later years. In closing, Mr. Sapienza said that under the new law, it will no longer be necessary to adjust the net operating loss deduction by the difference between percentage and cost depletion.

# **Application of New Depreciation Policies**

PRESIDENT JOHN W. MURPHY, in opening his paper, "Application of the New Depreciation Policies to the Sand and Gravel and Ready-Mixed Concrete Industries," said that in the new tax law practically no part of the deduction area escaped change and in the depreciation section these changes have been almost entirely pro-taxpayer. The two associations are appointing a joint committee on Depreciation, made up of men from companies of all sizes, to study the problems and give help in answering questions which might arise.

Mr. Murphy pointed out that the need for fixed assets is of definite interest to the operating department because through new machinery greater efficiency is attained, costs can be reduced or new products can be made. Depreciation, he said, is important to the sales department as the selling price of materials must recover all the cost of doing business plus a profit. Those who must estimate the future demand for our products must arrange that plant facilities are adequate to take care of such future demand. The addition of new or enlarged plant facilities causes concern about the depreciation charges such additions cre-

The view point on depreciation has

changed, he said, since the passage of the income tax law to the attitude of how much depreciation can be taken under the law so that taxable income can be reduced as much as possible. Theoretically, he said, the correct answer is that the depreciation rate taken should exactly reflect the useful life of the equipment which is not only good theory but also good practice. Depreciation should include not only the wear and tear and physical deterioration of the assets but also obsolescence. He said that depreciation expense should take into consideration three factors: (1) depreciation base, which is ordinarily cost, but may include also installation charges, freight, etc.; (2) residual or scrap value; and (3) estimated useful life. The cost less the scrap value determines the total expense charged to operations, and the estimated useful life is the total period over which the charges are made.

Under the new tax laws, new methods of depreciation have been granted which give the option of recovering a larger percentage of depreciation over the early years of the equipment's life. He stressed that these new methods of calculating allowable depreciation expense may not be used on all of the fixed assets. They may only be

used on tangible property such as plants and equipment which were new after January 1, 1954. Mr. Murphy expressed the opinion that in the case of some equipment it will be of advantage to use the new methods.

The two new methods are known as the declining balance method and the sum of the years' digets methods. Previously, under the declining balance method of taking depreciation it was permitted at 150 percent of the straight-line rate. Under the new law, the declining balance method can be used at not to exceed 200 percent of the straight-line rate. For example, if a piece of machinery has an estimated life of ten years the straight-line rate is 10 percent, but under the declining balance method a rate of 20 percent can be used. However, this rate is applied on the original new cost of the equipment only the first year; each succeeding year the 20 percent is applied to the original cost less the depreciation which has been taken. Applying this method to any equipment which has a life of seven years or less, 50 percent of the cost is recovered in the first two years while at the end of 50 percent of the life of the equipment about two-thirds of its total cost will have been recovered. Under this method, the full value of the equipment is never recovered and therefore the original basis of the asset without regard for salvage value is used.

The second method approved by the Internal Revenue Department, the sum of the years' digits method, is similar, but in setting up the depreciation rate to be used each year, a changing fraction is set up and applied to the original cost less salvage. The denominator of this fraction is the sum of the years of the expected life of the equipment. For example, equipment having an estimated ten years life has as its denominator the sum of 10, 9, 8, 7, 6, 5, 4, 3, 2, 1 or 55. The first year's depreciation allowance would be 10/55 of the cost less salvage, the second year's depreciation would be 9/55 and so on. Slightly less depreciation under this method would be obtained the first year than under the declining balance method, but after that the two methods very nearly parallel each other with any advantage, said Mr. Murphy, probably on the side of the sum of the years' digits method by reducing the book value more rapidly.

Speaking for his own company, the Union Sand and Gravel Co., Spokane, Wash., Mr. Murphy said that in the case of buildings, plants, and equipment which have a life of approximately ten years or more and where the asset itself is subject to only physical deterioration and is not subject to

obsolescence, the old straight-line method offers some advantages.

The law grants taxpayers the option to switch to straight-line depreciation from the declining balance method at any time on the basis of the then book value less salvage and the estimated remaining useful life of the asset by merely attaching a statement to the return. Mr. Murphy said that a taxpayer may set up his own method of taking depreciation as long as the method does not yield more depreciation deductions during the first twothirds of the asset's life than does the declining balance method. However, once a method has been chosen for a particular asset it may not be changed without prior approval of the Bureau of Internal Revenue. Taxpayers may by agreement with income tax authorities enter into written agreements which specifically set forth depreciation rates for certain assets. Such agreements are then binding on both parties and may be changed only after written notice. Mr. Murphy expressed the view that the Internal Revenue Bureau seems to be taking a more lenient attitude on depreciation.



Ches. E. Marshell, Fort Worth Sand and Gravel Co., Quigley plant, Fort Worth, Texas, receiving Class B safety award from John W. Murphy, president of the association

# Labor Costs and Fringe Benefits

PAUL J. KREMER, The Buffalo Slag Co., Inc., Buffalo, N. Y., used charts to illustrate his paper on "Labor Costs and Fringe Benefits — How to Effectively Control Them." He pointed out that pensions, social security, unemployment insurance benefits, sickness, hospital and medical services, vacations, sick leaves, and holidays have increased the cost of doing business and have given workers increased compensation for each hour actually on the job.

Mr. Kremer described his company's organization which is composed of four corporations, operating 16 plants from which blast furnace slag, limestone, sand and gravel and blacktop are sold. All accounting, sales, traffic, etc. are handled with the same general office force in Buffalo, N. Y.

About four or five years ago, said Mr. Kremer, the company decided to set up a standard payroll procedure manual which each plant follows. This manual tells the plant clerk or plant superintendent exactly what to do in practically all circumstances. Because of the many controls in the manual that spell out company policy, the company does not have the troubles with employes and union stewards that many plants experience. This manual has an index prepared in chronological order that starts out with the employe punching in and goes through the various items that might

come up, ending with the general office procedure after the payroll is received for checking. Questions of holiday pay and overtime are clearly answered.

Shown on the screen was a weekly analysis of manhours and labor costs which has been termed. "Analysis of Production, Man Hours and Labor Costs." These studies are made for most of the plants. These studies include departmental costs to handle material and also production per man hour. Straight time hours, overtime hours and double time hours are also shown. A separate section shows repair labor, vacation and holidays. For the particular plant shown, the tons per man hour, after including repair labor, were 4.2 and the labor cost per ton was \$.428. The report shows whether there have been any delays. The total amount of straight time hours and overtime hours for the entire plant expressed in percentage also is shown.

Referring to the question of "fringe benefits," Mr. Kremer said that the control of these benefits, particularly those having to do with time worked, can only be accomplished through careful auditing of the records. The standard payroll procedure manual helps take care of this. When an employe leaves his company's employment, whether he is laid off, quit or discharged, each plant superintendent is required to send to the main office a "Reason for Leaving Employment" report. The reason for leaving employment report serves as a check for the payroll department and is used by the secretary of the pension committee who takes care of the pension cancellation. It also goes to the department handling group insurance and charities, and they are cancelled. Mr. Kremer said that his company follows the payroll deduction plan to eliminate collections for individual charity drives.

Mr. Kremer explained the company's control for unemployment insurance. All claims are watched closely. A protest and an appeal is made in all cases in which the company thinks that unemployment insurance payments being made are incorrect.

Commenting on the overall problem, Mr. Kremer told about the survey made by the Chamber of Commerce of the United States for 1953 on fringe benefits. Among the 940 reporting companies, the benefits ranged from less than 5 percent to over 55 percent of payroll. The average payment was 19.2 percent of payroll, 34.6 cents per payroll hour or \$720 per year per employe. For the sand and gravel and ready mixed concrete industry group, the fringe benefit costs were 15.8 percent of payroll, \$.278 per payroll hour, and \$587 per year per employe.

Discussions of papers by Mr. Murphy and Mr. Kremer, were presented by E. J. Halter, J. K. Davison & Bros., Pittsburgh, Penn., Henry H. Kirwin, Eastern Rock Products, Inc., and M. E. Rinker, Rinker Materials Corp., West Palm Beach. Fla.

In closing this session, J. Rutledge Hill pointed out that percentage depletion is designed to keep you in business. He urged members to contact Congressmen and tell them about your problems. tion benefit would be similarly increased by \$1 per day and the allowance for extras from \$140 to \$160.

Due to the fact that many interested companies were located in states where compulsory cash sickness laws were effective, it would have been almost impossible for many companies to have accepted a plan containing accident and sickness benefits. Mr. Shepherd announced that his company had been able to arrange an accident and sickness benefit which can be incorporated in conjunction with the balance of the association program, which should make it more attractive to both present and future members.

Details of this new plan, available on an optional basis are as follows: Benefits are payable from the first day of accident and eighth day of sickness with 13 weeks' coverage for any one period of disability, the plan being divided into three employe classifications; (1) weekly earnings of less than \$35, (2) weekly earnings of \$35 to \$50, and weekly earnings of \$50 and over. Benefits would be for employes under No. 1 classification, \$14; No. 2 classification, \$21; and No. 3 classification \$31.50.

# Insurance-Welfare Funds Labor Agreements

DONALD SHEPHERD, insurance consultant, representing John Hancock Mutual Life Insurance Co., reviewed the accomplishments and contemplated changes in the N.R.M.C.A. and N.S.G.A. group insurance plan which was launched on April 1, 1953. He pointed out that the plan fits the basic concept of a trade association as it provided insurance for all participants at lower costs than could be obtained by a member as an individual company, and also broader coverage, a uniform benefit program, and it gives a large percentage of the membership the opportunity to obtain the broad benefits of group insurance.

These benefits would be unavailable to a large percentage of the membership on an individual basis because the number of employes covered in the individual companies is less than the minimum number which most states require; namely, 25. There are now 46 employer member companies insured under the association program, with a total of 1463 employes insured with additional protection on the dependents of 942 of these employes. The total benefits which will have been paid for the 12 months of 1954 will approximate \$80,000 or five times the amount of dollar benefits paid during the first year of the plan.

Mr. Shepherd said that while the claims experience was such this year that no dividend could be paid to participating members, the insured had the benefit of much lower gross rate

charges than would have been effective if the plan was set up on an individual company group insurance basis. While the loss ratio last year was high, the premium charged remains the same.

Coverage under the plan was outlined by Mr. Shepherd. The current charge for employe's coverage only, to each individual employer participant, for each individual employe covered, is \$4.53 monthly. The coverage consists of \$2000 life insurance payable for death from any cause, plus an additional \$2000 if death is accidental or if the individual suffers dismemberment or loss of sight. The policy also includes an infantile paralysis benefit, hospital care, doctors' visits, and an allowance up to \$200 for surgery. Active officers, partners and proprietors and executive assistants, in addition to coverages mentioned previously, may have life insurance up to \$5000 and accidental death and dismemberment insurance for a maximum of \$5000.

Coverage for dependents of employes is under the same basic contract as for employes, except that the daily hospitalization benefit is \$7 instead of \$9, and the maximum allowable for additional benefits is \$140 instead of \$180. Meetings have recently been held with the trustees of the insurance plan to discuss the advisability of increasing the daily hospital benefit from \$9 to \$10 per day and the allowance for extras from \$180 to \$200. The dependent hospitaliza-

# **Welfare Funds and Area Contracts**

Chas. A. Horsky, counsel for N.S. & G.A. and N.R.M.C.A., in his illuminating address, led off with descriptions of the various forms of area contracts or group bargaining. He said that it might take the form of a single contract signed by representatives on behalf of all employers or it may be behalf of all employers or it may be that while area contracts preceded the Taft-Hartley Act by many years, the Act put the practice on a sound basis.

He said that the first threat to area agreements came from the so-called Lucas Bill of the last Congress. Mr. Horsky explained that this bill, which was intended to cut down the power of the national unions, would have little effect in that direction, but would have seriously crippled the power of employers to deal with national unions. He did not consider this bill a present threat. An indirect attack on area bargaining involved the Morand case in which the National Labor Relations Board announced that it was unfair labor practice for employers, who had entered into a group contract with a union, to lock out their employes as a defensive measure against a union scheme to pick them off by striking one of them at a time. The Morand case was sent back to the N.L.R.B. for another look and some of the Federal Courts of Appeal refused to accept the doctrine. The Morand case was overruled by the Board in the Buffalo Linen Supply

Co. case, in which it was held that employers who are bargaining on a group basis may lock out their employes, as a defense measure to fight union "whip-sawing."

Mr. Horsky cautioned, however, that the new National Labor Relations Board policy did not make all joint lockouts legal. If the group of employers have not engaged in real joint bargaining, or if the strike against one employer is not really in support of demands made on all employers, the joint lockout may still be illegal.

Turning to the subject of employe welfare funds, Mr. Horsky said that area contracts may result in area or group commitments to joint welfare funds. Under the Wagner Act, said Mr. Horsky, the idea was that it was no business of an employer how his employes conducted their organized activities. With the passage of the Taft-Hartley Act, this philosophy of employer non-interference was not entirely abandoned, but in certain areas it was changed. Congress not only permitted but required the employer to be concerned. A welfare fund, to be permitted at all, must have employer as well as employe trustees. The employer trustees were expected by Congress to assure that the money would be spent in legal and proper ways.

Mr. Horsky said that many employers found it very hard to operate under the two opposite philosophies of strict "hands off" where most union activity was concerned, and of direct and intimate participation in the matter of welfare funds. The unions resisted the provision of the law which brought the employer into a matter which was, in the opinion of the unions, as none of the employer's concern.

The union welfare funds have experienced a mushroom growth, and with the reluctance of employers to accept full responsibility and union insistence of complete power, shocking examples of abuse of trust have occurred which has led to Congressional investigation and action by the New York legislature. Disclosures in the newspapers and the threat of legislative action, said Mr. Horsky, has led both the CIO and the AF of L to cooperate with the investigations. There has been squandering of assets, including payments of benefits to ineligible person, and "influence" payments to union officials. Where the funds have been insured, there has been irregular conduct by insurance brokers, operating charges and commissions have been high, and there have been instances of the payment of "commissions" to union officials to get business.

Mr. Horsky said that the employers cannot remain indifferent to these con-



H. A. Keep, safety director, to the left, and Fred P. Curtis, president of Lyman-Richey Sand and Gravel Corp., to the right, being presented with the Class B safety award by President Murphy of the association, center

ditions, and if any officers of a company are actually employer trustees, their responsibilities are direct, and the potential liabilities for failure to meet these responsibilities are tremendous. Losses which welfare fund suffers because the union trustees are unworthy of trust are equally the responsibility of the employer trustees if they stand idly by and close their eyes and ears.

Two bills were introduced in the last session of Congress dealing with welfare fund abuses. One of them, said Mr. Horsky, would have prohibited the denial of benefits as a disciplinary device by unions, but this problem has been taken care of by the N.L.R.B. in two recent decisions. The other bill was introduced by Sen. Humphrey. His bill would have required unions to disclose, in annual reports filed with the Secretary of Labor, considerable details about the funds and their operations, and would have limited the sort of investments which such funds can make. Mr. Horsky feels that disclosure, as required in Sen. Humphrey's bill, is not enough. Employers should take an interest in any funds to which they contribute by finding out how the welfare funds are administered and by whom.

# **Industry Wage Pattern in 1954**

Kenneth E. Tobin, Jr., assistant executive secretary of the N.S.G.A, and N.R.M.C.A., gave a very excellent analysis of the survey of 80 members, whose operations are representative both as to size and geographical locations, on the question of labor relations programs of these companies during 1954. Of the 80 companies, 78

responded with detailed and interesting replies.

He pointed out that while there was not complete uniformity on wages and employer - employe relations, there was a substantial similarity in many basic matters caused largely by the dominant numbers of Teamsters Union contracts in effect in both industries. Mr. Tobin said that a distinct pattern is revealed throughout the entire country. The usual union demand in the two industries was an increase of from 15 cents to 35 cents per hour in the straight-time rate of pay, seven paid holidays, a guaranteed workweek of 40 hr. at straight-time pay, an effort to obtain a guaranteed annual wage, installation or liberalization of existing health and welfare plans, and liberalization of the vacation program.

Mr. Tobin said that unlike 1953, there were few strikes in the two industries during 1954. Only six companies reported strikes and only one of these was of more than 10 days' duration. The average increase in the straight-time rate for employes in the two industries who are represented by a labor union was 10 cents an hour everywhere except in the states along the Atlantic seaboard from New York to Maryland. In these states the increase was about 20 cents per hr. With the exception of companies having union contracts of two, three or five years' duration, only two producers reported new agreements which did not provide for an increase in the hourly rate. One of the two companies incurred a substantial increase in payroll costs by agreeing to installation of a union health and welfa e plan.

There was a liberalization of vacation provisions, said Mr. Tobin, with the trend toward a two weeks' vacation after three years of service. In 1954 there were three principal demands made by the unions on the two industries: (1) two weeks' vacation after one year of service; (2) three weeks' vacation for employes of long service; and (3) calculation of vacation pay on the basis of a percentage of earnings during the preceding year rather than on the basis of 40 hr. straight-time pay.

Unions have continued to ask for more paid holidays. Although the request was generally for seven holidays, present agreements in the industries range from two to 11. The request for more than seven days was infrequent, and during 1954 only three of the 78 companies granted an increase in the number of paid holidays, the majority renewing contracts on the basis of holiday provisions in the previous contract.

Mr. Tobin said that unions have intensified their campaign for a guaranteed workweek, and for the first time in 1954 a really significant number of companies in the industries have agreed to this provision. The guaranteed workweek agreed upon was 40 hr., although in one case the guarantee was for 48 hr. in the spring, summer and fall, and 44 hr. in the winter months. Several companies reported demands by unions last year for the first time for a guaranteed annual wage, but the demand was not pushed seriously in 1954.

In the matter of agreeing to health and welfare fund demands, said Mr. Tobin, the effort has been made, but not always successfully, to exclude the plan from the collective bargaining agreement and to place its administration in the hands of competent, impartial persons whose integrity is beyond question. The group insurance plan of the associations continues to grow as member companies succeed in prevailing upon the unions to accept it in place of contributions to a union health and welfare fund.

Mr. Tobin cited several individual company experiences in which unions made absurd demands, but the companies refused to be intimidated and won the issues. Although the traditional trend in the sand and gravel and ready-mixed concrete industries has been to one-year contracts, Mr. Tobin said that the survey indicated more two-year contracts are now in effect with a few three-year contracts and two five-year contracts. However, most of the contracts over one-year provide for reopening of the contract only for wage negotiations or specified increases during the life of the contract. A summary of contract expiration dates revealed that 50 percent of the labor agreements expire in May or June; 30 percent expire in November and December with the remaining 20 percent distributed in about equal number over the remaining months of the year. Mr. Tobin pointed out that it is usually desirable from the company's point of view that labor agreements expire at the end of the construction season. However, one company reported that it preferred to bargain in November rather than the spring as the other contracts in the building trades expire in April and May and these unions have gone out on strike at that time and crippled the

"The sand and gravel and readymixed concrete industries," said Mr. Tobin, are "enthusiastic about the benefits to be derived from area bargaining with other members of the industries." He said that members considering the creation of a state or area association for collective bargaining purposes or for a variety of purposes would be interested in a new Association publication entitled, "Outline of Standard Clauses for Constitutions and By-Laws of State and Area and District Associations in the Sand and Gravel and Ready Mixed Concrete Industries." The booklet was prepared by a committee under the chairmanship of H. G. Feraud of Los Angeles.

### **Labor Agreements**

Vince Ahearn, executive secretary, presented a "Check List for Employers in Writing Labor Agreements" in which he outlined suggestions and admonitions in drawing up workable labor agreements. He said that the sand and gravel and ready-mixed concrete industries "are accustomed to dealing with unions which don't regard their function as a bargaining operation; they think and talk of demands on the employer."

Mr. Ahearn pointed out that before the Taft-Hartley Act made the closed shop illegal, nearly all union contracts required the employe to be a member of the union before he could obtain employment. Even today, except in those states where right-to-work laws have been enacted, most of the industry's contracts provide for the union shop, under which membership in the union becomes involuntary after a limited period. However, the employer has the right to recruit his own help and he is not required to deal from the beginning with the union. The employe is required under the union shop provisions of the Taft-Hartley Act only to pay initiation fee and dues and his right to keep his job cannot be taken away from him because he fails to pay fines, penalties or assessments. Mr. Ahearn said that negotiations are not always marked by violence, and that there were many instances where amicable and pleasant relationships existed between management and labor.

He urged that a firm stand be taken against the reduction of management's function in collective bargaining to that of a humble applicant for softer terms. He said that unions should not be permitted to erect a wall between management and employes. Good management - labor relationship, he said, are essential to the survival of the company. Mr. Ahearn suggested that employers should prepare in writing their own proposals for a contract with a labor union. He warned about the trend to "pattern bargaining" in which the union makes up one contract for all employers with whom they deal, even if these employers are engaged in different types of industries. The industry should not accept such contracts, but should insist on a contract which is geared to the realities of the business.

Mr. Ahearn touched upon the requirements of management under the laws. In 17 states which have enacted right-to-work laws, the union shop is illegal because by specific terms, the Taft-Hartley Act yields to such right-to-work laws. The closed shop is illegal. Even under a union shop an employe can be discharged from employment only when he fails to pay established initiation fees and dues.

Some employers prefer the checkoff, he said, in order to keep business agents off their property and to avoid strikes caused by failure of employes to pay their dues. However, other employers take the position that the employe deal directly with the union to take any onus from the employer for withholding union dues from the employe's pay check.

The question of rates of pay is a local problem, but the Association furnishes quarterly reports on rates of pay, hours of work and conditions of employment in the industry throughout the United States so that reliable and up-to-date information will be available when dealing with unions. Showup time and the right to assign employes to other than their ordinary jobs are other facets of the problem. Mr. Ahearn said that employers should guard the right to assign jobs in setting up a labor agreement. He said that it is also important to stipulate in the contract just what wage re-opening calls for. In the matter of hours of work, there is no common pattern, he pointed out, but generally labor agreements in the industry call for premium pay after a stipulated number of hours in the workweek and for working on Saturdays, Sundays and holidays. Sometimes premium pay is allowed for daily overtime, but it is important to make a reservation that premium pay shall not be paid twice for the same hours. Mr. Ahearn quoted two paragraphs of recommended practice covering holiday pay for incorporation in a wage agreement covering holiday pay.

Mr. Ahearn said that there is room for much improvement in the seniority clauses in labor agreements. He presented a recommended seniority clause which follows: "When ability, merit and physical fitness are equal, employes with the greatest seniority will be given preference in advancement to high-rated jobs, except promotions to positions excluded from the coverage of this agreement. Increases or decreases of working forces shall also be on the same basis." He also listed five of the reasons for losses of seniority which should be included in the contract. Mr. Ahearn strongly opposed tripartite arbitration covering either new terms or disputes arising as to the meaning of the language of the

agreement. He suggested that arbitration should be done by a single arbitrator or impartial umpire. Mr. Ahearn also suggested a paragraph on management responsibilities which spelled out the rights of management.

In the discussion which followed, the question was raised as to who would be an impartial arbitrator. Mr. Ahearn replied that such an arbitrator might be a judge, a member of a college faculty or the federal conciliation service might suggest a list of several names from which one might be selected. The question of special paid holidays resulted in an exchange of information from various companies; some demands have even included paid holidays for weddings, anniversaries and birthdays. It was also brought out that a plea by a company



Municipal Auditorium, Miami, Fla., where most of the meetings were held and the scene of the 25th anniversary banquet of N.R.M.C.A.

that it could not afford an increase in wages, might result in a demand that the employer present its books and records to prove inability to pay the increase. acre which might have been reasonable on the basis of land value exclusive of its sand and gravel content.

Mr. Humphries believes that cases of this type perhaps involving other agencies than the federal government will increase in number and he believes the industry should take action to protect itself from such cases. He sees it as a problem of public relations or education, to inform the public that the industry is legitimate, important to the economy and renders a real service.

As a suggestion, he believes it would be wise for producers to become informed on sales of lands in their areas, and to take steps to acquaint people with their operations and problems. In conclusion he advocated that the association establish a permanent committee for the promotion of good public relations for the industry.

# **Improving Public Relations**

THREE VERY EXCELLENT PAPERS were presented before a session of N.S.G.A., all having bearing on the all-important subject of the sand and gravel industry's relations with the public. In view of the trends in zoning and all manner of other regulations affecting the industry, which have become serious in recent years, this was an extremely valuable session.

"What May the Sand and Gravel Industry Expect in Land Condemnation Proceedings Instituted by Governmental Agencies" was the subject of a paper by Richard K. Humphries, Pacific Coast Aggregates, Inc., San Francisco, Calif. Mr. Humphries prefaced his paper by saying that difficulties his company has encountered as the result of land condemnation proceedings would have been much less serious, had warnings of other producers been heeded and action been taken five years ago.

The property involved in the condemnation proceedings is on the American River near Folsom, Calif., 20 miles east of Sacramento. It consists of dredger tailings over some 8000 acres. The company and predecessor companies have been in operation on these lands since 1906, and its present plant is five miles downstream from Folsom with its lands adjoining the downstream side of the town. These lands have no useful value except to an aggregate producer since they are of exposed gravels left from previous gold dredging operations. Folsom Dam is 2.5 miles upstream from Folsom and there are no gravels between the dam and the town.

Preliminary testing of materials for construction of the dam began in 1947 and reports were prepared by the Army Engineers and the Bureau of Reclamation. The land was condemned by the Army Engineers on February 1, 1949, and again on September 21, 1951. Total land taken was 299 acres. On July 1, 1952, the Bureau of Reclamation condemned 1105 acres for a holding basin in connection with construction of the Nimbus Dam.

Haul roads had been built into the area and digging equipment was being moved into the area at the time of taking. The company supplied aggregates for Nimbus dam but was forced to re-appraise the entire deposit and reluctantly opened operations some three miles downstream from its present elect.

The case was set for jury trial in July, 1954, before the U.S. District Court, and the main point was to determine the fair market value of the land per acre at the time of taking. Submission of evidence by the company of sales or purchases outside the county was refused but evidence was permitted on sales and purchases by informed gravel producers within the county ranging from \$25 to \$3000 per acre. Government witnesses testified to a maximum value of \$25 to \$50 per acre. The company was asking \$1000 to \$1500 which was based on the depth of ground computed to total yardage, which figure reflected a payment of five cents per cu. yd. in place. There was good evidence of material sales at this figure but no actual land sales.

The jury was submitted to highly conflicting testimonies on a subject foreign to its experience and had no appreciation of the industry's workings or problems with respect to depleted deposits. The jury came up with a disapproving figure of \$125 per

### Britain's Answer to Problem

A PAPER ENTITLED "How Britain Answers the Problem of Public Interest in the Industry" by H. E. Peirce, chairman of the Ballast, Sand and Allied Trades Association of Great Britain, was of interest because the problems of land reclamation, zoning and public relations in a much smaller country are difficult and may indicate the trend to come in the United States as our population continues to expand and our existing sand and gravel deposits under work become depleted.

Great Britain is about the size of Minnesota, has a population greater than 50 million and there are about a thousand sand and gravel pits. Thus, it is impossible to use up land without encroaching on others. In fact, without land planning, or zoning, the country would suffer.

Production in Great Britain is now 55 million tons annually, which is more than twice the rate in 1946.

The idea of planned use of land came with planned reconstruction following World War II, and the industry set out to see that effective planning did not interfere unnecessarily with its operations. The association

started out to show the government that sand and gravel were to be just as vital in peace as in war and suggested that there be a national survey of resources. Otherwise an impossible situation, without benefit of education, would have resulted.

An advisory committee on sand and gravel was established in 1946 which included three member company representatives, geologists, local authorities and government officials. Nearly all production is hauled by trucks so sand and gravel operations constitute a local industry. Accordingly, the country was divided into 16 gravel regions and these were broken down into "service" areas. Reports were written for each region, discussing available deposits, markets, agricultural values, etc., and recommending that certain areas be used exclusively for gravel operations. Two additional reports comprised a general survey of the industry.

Recommendations of the committee are offered to local authorities purely for their guidance, and they are serving efficiently in overcoming ignorance of the industry. In the Planning Act itself, minerals were not exempted from the actual zoning restrictions. As a result of all this the industry has had very close contacts with the Ministry concerned and discussions with members of the House of Commons and the House of Lords.

The zoning provisions of the 1947 Act require that no pit can be opened or extended without permission and permissions are always subject to conditions requiring the land to be worked in certain ways, and to be reinstated after workings are finished. Some of these conditions are unrealistic and it sometimes is necessary to appeal to the Minister for a change or to reverse denials to operate at all. Public inquiries are held in such cases and permissions generally are refused but some 50 percent of such decisions are reversed by the Minister.

The River Pollution Act of 1951 prohibits the contamination of streams. At first wet gravel pits were included which was ridiculous, but that has been changed. Sometimes producers limit the depth of gravel removed to leave some for filtering to satisfy those who claim pollution.

About 2000 acres of land are worked out in a year and they must be reclaimed. In country districts, worked out wet pits generally are converted into lakes used by fishing or boating clubs. The association has issued a pamphlet on the subject and will put out another on how to stock lakes with fish.

The Advisory Committee's report recommended, for derelict pits or

those where little can be done economically toward restoration, that there be a national fund to which the industry would contribute the larger part and the balance provided by the national Exchequer. This recommendation is expected to go into effect soon.

Lack of understanding of the industry generally has impressed upon the association the necessity for seeing that all in government are informed. The industry had for years gone on with the knowledge that it was an essential industry and it is only in re-

cent years that it was recognized as a mistake not to tell the general public the industry story.

Nowadays the industry makes public every vital fact about sand and gravel through the editorial columns of newspapers throughout Great Britain. A conference of national and technical papers was held by the association in 1954 to acquaint the editors with the industry and each was handed a booklet with facts on the industry. More such conferences are to be held in different parts of the country.

# **Reclamation Pays Off**

IN HIS PAPER, "WHY OUR INDUSTRY SHOULD BE INTERESTED IN RECLAMATION," F. D. Coppock, chairman, American Aggregates Corp., Greenville, Ohio, brought out a number of practical points, economically and otherwise, to emphasize that the reclamation of worked-over land is most desirable practice.

Mr. Coppock started in the sand and gravel business 53 years ago when shovels and wheelbarrows were in use, and his company now has 15 plants producing more than 10 million tons annually. It was 25 years ago that Mr. Coppock decided to do something about the unsightliness of worked over deposits, and this has become a major undertaking as operations grew. Today, the company exhausts some 250 acres of deposits annually.

Mr. Coppock pointed out that portions of reclamation costs can be included in operating cost if reclamation is integrated with operation. With respect to this, he said: "If we dispose of surplus sand, strippings and waste material as part of our operation in such a way as to produce a desired condition and lessen the ultimate cost of rehabilitation, these costs would then become a part of the current operating cost. If we did not spend a part of our earnings by doing these things as a part of current operations, we would then have to pay the normal and surtax amounting to 52 percent on the added profit.

"An interesting sidelight is that the tax which we have to pay on gains from the sale of real estate is 25 percent as compared to the normal and surtax amounting to 52 percent. Incidentally, if we do this reclamation work as a part of our operating cost, the government also gains in the end as the 25 percent which they will receive on the gain from the reclaimed property, which would otherwise be worthless, will far exceed what they temporarily use in profit tax. Besides, the local communities will benefit ma-

terially by the development of taxable property, whereas if these areas are not reclaimed they will not only be worthless but will be detrimental to all adjoining properties. It is difficult to realize or even estimate the full value of such reclamation work, especially when the properties are located within thickly settled communities."

Reclamation work was first started 25 years ago at the original plant where considerable lake areas were produced. Shorelines were sloped to make mowable slopes, and acres of grass and a few thousand trees were planted. A fishing club was formed and lots were leased on which cottages and homes were built. Cottage owners later formed a corporation and bought the area. The corporation has paid American Aggregates Corp. the entire purchase price of \$120,000 for 277 acres and still has one-half of the lots to sell.

Mr. Coppock described the work at all the other plants. At the Columbus-Dublin plant, within the Columbus, Ohio, city limits, surplus sand, strippings and a portion of the area has been used in the preparation of a building width fronting on a 6-lane boulevard with a mile-long lake in the rear. These lots are being sold at \$125 per front foot. The company has realized more from the sale of lots than the total original cost of the laud plus all the rehabilitation costs and less than one-half the lots have been sold so far.

At Oxford, Mich., a 500-acre tract with a mile long lake on it is being reclaimed. It is being beautified and planted and lots will be aold there. At Indianapolis, Ind., and Dayton, Ohio, surplus sand and strippings are being disposed of to produce factory sites some of which have been sold at several times the original cost of the land. At Dayton, gravel is being excavated from a 200-acre city-owned tract for the purpose of building a freshwater reservoir for the city. At

several other operations, reclamation of various types is underway.

Mr. Coppock said that not all worked-over areas can be reclaimed and made equal in value to the cost of rehabilitation but he believes that any worked-over area can be sufficiently reclaimed at a cost less than the damage done to neighboring properties.

On purchased land for reserves near or within cities, ten thousand young trees are being planted this Spring to make these areas pleasant to neighbors. He cautioned that unless producers reduce objections to their operations they face being zoned out of most desirable locations adjacent to populous centers. The added cost of making deliveries from more remote locations, he pointed out, will greatly exceed rehabilitation costs.

Mr. Coppock believes that a pro-

ducer has an obligation to the public to keep worked-out areas from being unsightly. Unless this obligation is assumed, legislation will force it, in his opinion, or producers will be required to pay the state an amount per ton on materials excavated. He concluded by suggesting that producers, rather than be interested only in profits, do some of these things which will be lasting reminders of public interest.

# **BUSINESS Prospects for 1955**

A PANEL DISCUSSION of business prospects for 1955 which concluded the final joint session of the two associations reflected optimism for a high level of business but which will be accompanied by keen competition. The panel consisted of 12 members from various geographical areas blanketing the United States and their comments were for both industries.

Chairman E. Phil Gemmer of Houston, in reporting for the entire state of Texas, said that volume of business, tonnage-wise, was 25 percent greater in 1954 than in 1953. Profits also were better although hardly sufficient. Over-production still exists in this territory which is responsible for holding down prices.

Business was on the up-grade late in 1954 and prospects for 1955 are excellent and Mr. Gemmer anticipates that good business will carry into 1956. Significant in his opinion is that increased construction volume came more from private expenditures than government spending that had declined through 1954, which will have a stabilizing influence.

Sand and gravel and ready-mixed concrete business in Texas will exceed 1954 levels in 1955. Building permits in 1954 had been about 10 percent above 1953 until a jump occurred in the last quarter on the order of 80 to 100 percent greater than in 1952 or 1953. They cover industrial and commercial projects, housing and apartment buildings, and guarantee increased activity for the first half of 1955. Other projects being let or on the drawing board will provide the need for construction materials later in 1955.

There are hundreds of new residential developments in metropolitan areas, and public works and public utilities are expected to keep pace. New military installations, practically non-existent in the Houston area for several years, will again become a factor in the form of air force runway construction. Plans for streets, expressways and highways are enormous. At least one toll road is expected to be

started in north Texas in 1955, and there are plans for such projects later in south Texas.

Cement supply in 1954 was better than in recent years. There were some shortages but no ready-mixed concrete plants were seriously affected. However, the demand taxed supply and cement mills in this territory are increasing capacity in order to relieve the pressure.

There were scattered stoppages of construction due to labor trouble in 1954 and more such occurrences are expected as business volume gains.

Speaking for his own company, Mr. Gemmer said that an entirely new plant has started operating to increase production by 20 percent, and that another plant is scheduled for rebuilding

C. A. Barinowski, Birmingham, Ala., in speaking for his area and the southeast generally, said that the outlook for business in 1955 is very good provided that the program of the administration in Washington does not meet up with serious political obstruction.

Production and sales of all aggregates and ready-mixed concrete were at a high level in 1954, and should continue good throughout the southeast, in his opinion. Needs for schools and highways are very high. Ready-mixed concrete volume in 1954 was up 15 percent over 1953 in the Montgomery, Ala., area. In the Birmingham and Gadsen, Ala., area, heavy industrial construction was adversely affected due to the slump in steel production but will improve in 1955. Several large expansion programs by the steel industry are expected.

Construction of air bases by the military was active in 1954 and will increase further. The ready-mixed concrete industry has a very good market in the Atlanta, Ga., area. Practically all major metropolitan areas throughout the southeast enjoyed increases in volume in 1954, in the range of 9 to 15 percent.

Speaking for the San Francisco Bay and northern California area, R. S. Barneyback, Oakland, Calif., said that 1954 was generally a good year for both industries. Volume of business exceeded 1953 on the order of 5 to 10 percent but profits after taxes were down some 5 percent.

Producers in some areas enjoyed gains of as much as 20 percent in both volume and profit for 1954 due to large projects under construction. The new bridge under construction across San Francisco Bay, for instance, has greatly stimulated construction activities in Richmond and San Rafael.

No shortages of materials or transportation were experienced in 1954 and no labor troubles were encountered. Volume is not expected to decline in 1955 and profits are expected to increase.

According to the Bank of America, the number of new housing units built in California has averaged 170,000 annually which is 14 percent of all homes built in the nation. With an increase in population at the rate of 360,000 per year, a high level of housing demand is expected to be sustained; and commercial, public and industrial building will keep pace.

Credits and competition were mentioned as pressing problems facing the two industries but, more serious, according to Mr. Barneyback are regulations by county planning commissions that threaten the operations and very existence of the industries. He stressed the need for a well planned and executed public relations campaign.

Construction in Los Angeles county was at a record pace in 1954, according to Harry E. Bender, Azusa, Calif., exceeding 1953 which was the all-time high. Volume of business is expected to increase further in 1955, for all classes of construction. Of the total increase in population of 360,000 annually in California, half of the increase is in Los Angeles county.

A cement shortage was experienced in 1954, but it was not serious like in 1953, because northern California cement mills had excess production and shipped into Los Angeles county. The principal problems facing the industry is concerned with the traffic situation. Attempts are being made to prohibit the trucks from the Freeways.

E. K. Brown, Duluth, Minn., reported that 1954 volume of business in Minnesota, according to a check, was almost without exception equal to 1953 and that in some instances had increased by 5 to 8 percent. However, net profits were lower due to competition and increased costs of cement which could not be passed on to the customer.

Prospects for 1955 are encouraging. A survey of 87 cities of the ninth Federal Reserve District, comprising Minnesota, northern Wisconsin, North Dakota, South Dakota and the Upper Peninsula of Michigan forecast a 6 percent increase in building permit evaluation over 1954. This does not include state highway projects.

In 1955, the Minnesota State Highway Department will award 120 miles of paving compared to 105 miles in 1954. It also plans to place 335,000 sq. yd. of 7-in. concrete in various municipalities. Home building is expected to increase by 5 to 8 percent in 1955 over 1954. School building will be active as will be suburban shopping centers and parking facilities.

Cement was short for a period of three weeks in the late Summer of 1954 in the Duluth and Iron Range area, and such shortages in 1955 likely will constitute the principal prob-

lem of the industry.

Business conditions for the state of Nebraska and for southwest lowa were summarized by Fred P. Curtis, Omaha, Nebr. This area depends upon farm income which was somewhat depressed in 1954. However, both industries had a good year in 1954 due to good weather conditions and anticipate a 5 percent increase in volume in 1955. The expected increase in Omaha will be 10 percent.

Volume of sand and gravel and profits, in 1954, equalled 1953. All concrete in Omaha and Lincoln, Nebr., is ready mix and the volume in the two cities for 1954 was 5 percent greater than in 1953. Construction of by-passes at Omaha is expected to benefit ready-mixed concrete producers. Military construction in 1955 will be several times as great as in 1954. Commercial and industrial building may decline slightly. Construction of schools, hospitals, churches and power plants will hold at 1954 levels. Housing will increase by five percent. Cement has been in reasonably good supply but may become short in 1955.

A peak in construction was reached in 1954 for the Jacksonville, Fla., area with the completion of major construction projects, according to Wm. J. Hicklin, Jr., of ?acksonville. Volume of ready-mixed concrete and sand and gravel has doubled over a period of five years marked by steady growth.

Housing is expected to continue good. Dollar volume of permits in 1954 exceeded 1953 by 30 percent. Ready - mixed concrete volume increased 25 percent over 1953 this past year and 45 percent of the volume was for residences.

Cement was in sufficient supply in 1954 but spotty shortages may occur in 1955. Gravel is shipped 300 miles into Jacksonville and sand is shipped in 80 miles so car shortages were an occasional problem. Difficulty is expected in union-management relations with levelling off in business, due to the clamor for wage increases.

Metropolitan New York area had a higher volume of business in 1954 than 1953 in spite of three hurricanes and the 9-wk. cement strike involving ten mills, according to Frank L. Kelly, New York City. It is anticipated that 1955 volume will exceed 1954, with increases in all categories of construction and that high demand will carry on into 1956.

Private home and school construction will increase in 1955 and many multi-million dollar heavy construction projects will be underway. Among them are large office buildings, the Lincoln tunnel, subway construction, toll roads, large multi-storied private apartment houses, public buildings, the new Coliseum, hospitals, large slum clearance projects, marine terminals, water pollution and sewer projects. Volume of business will be substantially greater in 1955 provided that sufficient cement will be available.

Volume of business in North Carolina and South Carolina was 15 to 20 percent less in 1954 as compared to 1953, according to E. A. Mullen, Cheraw, S. C. Highway, heavy and public works construction experienced an 18 percent decrease in volume, and there was a sharp decrease in military and airport construction. As a result, heavy competition set in and there was a drop in the price structure.

Prospects for 1955 are very encouraging and volume of business may equal or exceed the high volume of 1953. The South Carolina Highway Department will spend 20 percent more for construction than in 1954 and North Carolina likewise will greatly increase its activity. Defense construction will also be greatly accelerated as will be school, water works and sewage disposal projects.

The report by James A. Nicholson, Toledo, for the state of Ohio was in the form of a compilation of statements from individual ready-mixed concrete producers in all parts of the state. In summary, the opinions statewide were that volume of business and profits had increased in 1954 compared to 1953, and that increased volume would be available in 1955. Profits in 1955 will be dependent upon how well producers face labor, cement supply and price competition problems.

Increases in volume in 1954 as reported ranged from 3 to 10 percent or more. In Cleveland, unfilled orders on hand were reported as slightly less than a year ago. In the Youngstown area, the report was that tough competitive practices have arisen on the part of producers operating non-union plants in fringe area.

A report from Columbus was that profits in 1954 exceeded 1953 profits by 10 percent and that another 10 percent increase will follow in 1955. In Akron the availability of quality aggregates has become serious and the delivery of aggregates from outside sources has added to costs.

From Springfield, Ohio, there was reduced volume but better profits in comparing 1954 with 1953, and volume will increase in 1955. Cement shortages there were serious and will become critical in 1955.

Profits in the Hamilton and Toledo areas did not rise proportionately with increased volume due to higher wage scales and cement price increases. Out-of-area cement shipments were required and, in Hamilton, it became necessary to ration even regular customers late in 1954. Contractors are being pressed competitively in their bids, and are playing subcontractors and suppliers against one another in order to make up the difference.

In central Ohio, one producer reported the cement shortage so acute that daily sales from August through October had to be restricted as much at 50 percent.

Mr. Nicholson concluded by saying that 1955 should be a good year for everybody. He warned against cutting

prices to get volume.

F. E. Schouweiler, Fort Wayne, Ind., reported that volume in 1954 increased by 15 percent over 1953. The number of building permits was one-third less, indicating that large scale jobs were under construction. The city is growing remarkably with the result that good volume of business is expected in 1955 and 1956. One toll road is under construction just north of Fort Wayne and there likely will be a second one.

Cement supply was reasonably satisfactory in 1954 but shortages in 1955 might well prove "catastrophic."

The report of Irving Warner, Jr., was that 1954 construction from Trenton, N. J., to Wilmington, Del., was

at one of the highest levels in history, exceeding 1953. It is expected to continue. Pennsylvania had its largest construction year in history with 20 percent more than in 1953. The outlook is very good for continuance of a high level of business. Apartment and residential building will be heavy in Philadelphia. Work will continue to join the Pennsylvania Turnpike with the New Jersey Turnpike and a north-south extension of 90 miles is to be built to the Pennsylvania Turnpike. Other large projects are expressway and bridge construction.

Labor disturbances and shortages were a handicap to delivery of concrete in the summer of 1954. Cement supply was tight from May through October because of strikes in the cement industry. The penalty was higher costs for out-of-area cement. Barring strikes, Mr. Warner believes cement supply will be adequate in 1955.

# **Washington Report**

IN RESPONSE TO A DEMAND for his appraisal of events in Washington, executive secretary V. P. Ahearn gave a "Washington Report" before the concluding joint session of the two associations. His comments were almost entirely on the results and significance of the 1954 elections.

The Republicans did not suffer as much of a decline in Congress, as feared, he said, in reminding that it is traditional for the party of the president to suffer losses in congressional elections. Because of the narrow margin in the Senate, the Democrats can assert control due to independent Senator Morse who is leaning toward the Democrats.

The fact that the number of Republican governors has declined from 29 to 21 whereas the Democrats increased from 19 to 27, means that the Democrats have more control of state machinery and, he pointed out, that means more Democrats are likely to enter congress since state governors appoint replacements upon deaths.

Unemployment and reduced agricultural prices were factors in the Republican election losses, along with contributing local issues. The Republicans have a big job on their hands because of the one party South automatically controlling a large number of seats in Congress, he said. Labor support of the Democrats had little effect on the results, in his opinion, and neither did the McCarthy controversy have any decisive result. President Eisenhower's popularity is unimpaired.

# **Engineering Director's Report**

Director of Engineering Stanton Walker's annual report which was

mailed to the membership was presented in summary form before the joint meeting of the two boards of directors.

He discussed staff personnel and their field of activities, activities of the staff on technical committees of technical associations and the general scope of laboratory research. He also commented on expanded activities in the dissemination of technical information, discussed regional meetings attended and covered the short courses held for both industries.

As to the future, scope of activities in the fields of research, consulting, publications and representation of the two industries before specification and test-method writing bodies are to be enlarged. It is hoped to increase the technical publication program materially, both in the fields of general information and reports of laboratory investigations. A summary of recent laboratory researches was appended to the report and also a list of publications and technical literature distributed in 1954.

(Reports of Operating sessions appear on pages 86 to 89)

# **Producers of Sintered** Aggregate Meet In Cleveland

New Officers were elected by The **Expanded Clay and Shale Association** at the annual meeting held in Cleveland, Ohio in conjunction with the N.C.M.A. convention. New officers are: Wm. Atkins, Lansford, Penn. president; R. A. Utiger, Denver, Colo., vice-president; Lucas E. Pfeiffenberger, Alton, Ill., secretary-treasurer; and T. R. Berger, executive secretary. Association headquarters are now at 522 Hamilton street, Allentown, Penn. Glen C. Barnes, Warners, N. Y., retiring president, extended an invitation to hold the mid-year meeting in July

at Syracuse, N. Y., which was accept-

An intensive program of test work, research and sales promotion was approved by the 11-member association of sintering machine aggregate producers which was organized a year ago. Reports were made on the progress of test projects undertaken by the technical committee. A forum discussion was conducted on the new uses for lightweight building materials and the increasing versatility of expanded clay and shale aggregates.

Members of the association include: Alton Brick Co., Alton, Ill.; Carolina Tuff-Lite Corp., Salisbury, N. C.; Cinder Concrete Products, Inc., Denver, Colo.; Lehigh Materials Co., Lansford, Penn.; Light Weight Aggregate Corp., Plymouth, Mich.; Marietta Concrete Corp., Marietta, Ohio; Moss Light Weight Aggregate Co., Memphis, Tenn.

# **Increases Plant Capacity**

DRAGON CEMENT Co., INC., has announced plans to increase the capacity of its cement plant at Northampton, Penn., by 33 1/2 percent. A fourth kiln will be added to the plant's present three, increasing production by approximately 600,000 bbl. annually. The expansion is estimated to cost about \$1,000,000, and will be completed this summer.

# **Expands Product Line**

THE RUBEROID Co., New York, N. Y., has announced the addition of Lite-Wall gypsum plaster to its line of gypsum products. It is a readymixed perlite and gypsum plaster, and is designed for use over metal or gypsum lath or masonry. It is said to be 50 percent lighter than conventional sand plasters.



Left to right: T. R. Berger, executive secretary; R. A. Utiger, vice-president; Wm. F. Atkins, president; and Lucas E. Pfeiffenberger, secretary-treasurer

# ROTARY KILN Its Performance and Development

 Part 2: Factors affecting kiln capacity and causes of heat losses are analyzed and recommendations for increased efficiency are suggested by the author

By VICTOR J. AZBE\*

SINCE RADIATION LOSS is so important and serious in the case of the rotary kiln of immense external surface with thin interposing walls and very high internal temperature, no system of improvement through the installation of coolers or preheaters can give an efficient unit unless it is also operated at a high capacity rate.

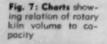
In fact if a cooler is installed, the fuel burned should not be reduced; the saving must be taken out in increased capacity or the full value of the cooler will not be realized. To reduce the loss at the cooler but therewith increase the radiation loss burden on the reduced quantity of coal burned gains little, a frequent occurrence.

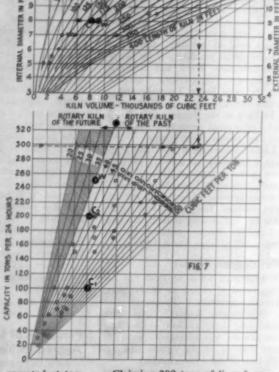
The gain to be obtained from external stone preheaters would be limited in a similar manner, but more so, since the temperature throughout the kiln would be increased while in the case of a cooler it would normally decrease.

High kiln capacity leads to higher thermal efficiency and a lower fuel cost, but there are other economic benefits. In most plants the additional lime quantity is made with but little more fuel, little more stone and plant labor cost and hardly any more overhead. It thus is of the highest profit bearing value.

In the case of gas fired, vertical kilns, capacity is mainly a matter of how much fuel can be burned. In case of a rotary kiln this also is a factor, but in the main it is a matter of heat absorption rather than of heat generation.

To obtain high capacity is often very simple, but to block oneself off from getting high capacity can be equally simple as will be pointed out. Almost all rotary kilns, for one reason Press, Asbe Carperation, 8t. Louis, Me.





or another, are being operated at too low a capacity rate. Some of the illustrations here presented are charts intended for repeated use to show the performance and the trend of individual kilns in comparison with other kilns

The main difference between the worst (very poor kilns) and the better performing kiln (normal rotary kiln range) of Fig. 3, ROCK PRODUCTS, February, p. 104, is that the latter is operated at about 2½ times the capacity rate, at 250 tons rather than about 100.

In Fig. 7, kiln "W" performance is plotted at 35 cu. ft. internal volume per ton of capacity. Kiln "C" is at 80 cu. ft. per ton of capacity which, to improve, should be moved toward the 35 cu. ft. line. If the capacity were doubled, the kiln performance would be located at 40 cu. ft. "C-2." This 35 to 40 cu. ft. range is very good and entirely possible for open kilns.

If the kilns are segmented, the volume becomes more effective as there is far more heat absorbing surface and less segregation. Substantially, segmented kilns would give a ton of lime for little more than 20 cu. ft. This performance point would be located within the shaded area. The same quality of lime would be obtained from kilns of much smaller diameter, shorter in length with much lower radiation loss.

Claiming 200 tons of lime from an 8- x 100-ft. kiln at 20 cu. ft. of kiln space per ton of lime may appear to be ridiculously exaggerated. But, the effectiveness of segmented kiln sections has been measured and is known, and there is nothing impossible about it. It is further proved by the fact that vertical kilns perform at 4 cu. ft. of kiln space per ton of lime.

Fig. 7, in its upper section also features shell area, which divided by capacity reveals radiation area per ton. Thus, the low capacity kiln "C" had 45 sq. ft. of radiating area per ton of capacity, while the kiln "W" at 250 tons had only 19.8 sq. ft. The 8- x 100-ft. kiln at 200 tons would have only 12.5 sq. ft. of much lower temperature surface.

A kiln 11- x 300-ft. at 300 tons would have 34.6 sq. ft. per ton. It is wrong, and particularly so if some sort of preheater or quadrants are installed at the back. Then one ceases to obtain the benefit of the preheating feature of the extra length, the temperature is raised throughout and the radiation loss is increased. Some slight improvement may be indicated, but nothing like it should be. The various kiln losses are in a sort of precarious balance and often when one thinks he is removing an item from this loss, he is but adding it to another loss.

There is some gain in having longer kilns, but there is more of a gain in

driving these kilns at higher capacity. If diameter is larger, length must be greater of course, but there is a rapidly diminishing value in increased length. Length seems to be an obsession; there seems to be an idea that it will provide an efficient kiln. But the origin of the kiln efficiency centers more around conditions in the front part of the kiln than the rear part. If the calcining zone of the kiln is not efficient, then extension of the preheating zone will have little effect since it is not this length that cools the gases but rather the amount of stone that travels down the kiln in relation to the amount of gas travel. What could prove this argument better than a 400-ft. kiln and a 175-ft. kiln operating at about the same capacity and the same fuel ratio?

There is no magic in the length of kiln nor its diameter, it is effectiveness that counts. Granted that when diameter is greater, length should be more but it is generally done to make up for the lesser effectiveness of the large diameters.

Excessive length means excessive idle zone in the mid-portion of the kiln, which may be 100 ft. or more in the case of long kilns. At one end stone is preheated, at the other end stone is calcined, in between there is a sluggish state of affairs active mainly in respect to heat loss by radiation.

Three hundred tons of lime or more sounds impressive until we evaluate this production on a prorated basis of kiln volume, heat release, heat waste surface, heat absorbing surface, calcining surface, volume of bed, degree of agitation, amount of abrasion, material segregation, gaseous stratifications, dust and other heat transfer interferences, etc. Then after toying with all this we wonder whether the high capacity was due to the extra large kiln, or was it due to the ample fuel burning provisions at one end and draft inducing provisions at the other.

Producers want 300-ton kilns but they should and could be obtained from kilns half as large, not twice or three times as large, for 20 to 25 cu. ft. of kiln volume not 50 to 75 cu. ft.

The higher the efficiency, the higher the capacity should be; also in turn, the higher the capacity the higher the efficiency will be. This should apply to a lime kiln but not necessarily to a cement kiln because, although it primarily is similar to a lime kiln, the critical zone is the very short clinkering length of the kiln. The action therein is quite different from a lime kiln; heat is generated within the bed by the exothermic reactions, which occur only at high temperatures and in turn induce high temperatures through-

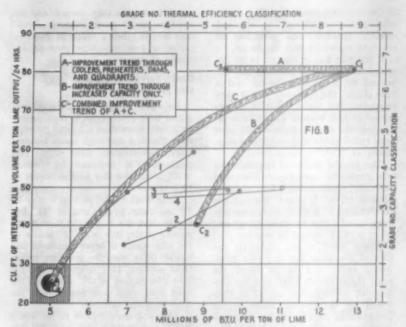


Fig. 8: Retary kiln classification and improvement trends

out the bed. It is necessary that these temperatures be high or formation of tricalcium silicate, essential to good cement, will be retarded. If the kiln is operated at an excessively high capacity rate, increasing quantities of carbonate will be brought into the clinkering zone, exothermic heat of the reaction will be used for endothermic processes of calcination, the bed will cool off, and a deficient cement will be the result. All this is due to zonal overlap, the curse of all rotary kilns.

There are many influencing factors which may arrange themselves into all sorts, many of them unknown and even unsuspected combinations. Thus, in the rotary kiln, heat transfer occurs mainly by radiation and when one forces the kiln by giving it more fuel, whether it is desired or not, the radiant zone is automatically lengthened so the improvement in kiln performance is not solely due to the proportionate reduction of heat loss from the shell. It is also due to improved heat transfer to the lime, the flame is longer, more radiant and more effective even though it may be milder.

Along this line, the opposite may also occur as when a cooler is installed the benefit expected may not be obtained. With air that is highly preheated, unless proper burner adjustments are possible, the flame will become shorter and hotter and its radiancy may dissipate itself in the tail section of the kiln where the residual calcination takes place and the least lime is made in the entire calcining length. If fuel is reduced, the radiant

zone is shortened still more, the radiation to the bed is reduced, radiation from the shell is increased, combining in good part to destroy the beneficial value of the recuperative cooler.

### Kiln Development Trend

Fig. 8 has a target in its lower left hand corner. This aim point is at about 5 million B.t.u. of heat and 20 cu. ft. of volume per ton of lime produced. It never has been reached, authentically. It never will be reached with kilns of low volumetric effectiveness; it even will not be reached if there are effective cooling and preheating provisions, unless kiln capacity in relation to kiln size is also very high.

This chart in a manner reveals the directional trend an improvement may take and its likely point of extinction. Thus, the aforementioned kiln "C" of the extremely low volumetric and thermal effectiveness could be improved from "C-1" to "C-2" through capacity increase. As capacity increases, exhaust temperature also tends to increase, so the improvement trend is a curve. It is doubtful whether results better than 8 million B.t.u. and a 40 cu. ft. rate could be obtained from such a simple kiln. Thus "C-2" is the likely limit of improvement. If stone to be calcined is of narrow size range, of favorable shape, of good conductivity and low calcining resistivity; if the kiln is of low inclination, equipped with dams for a heavy load and is operated at a high speed of rotation; if the fuel is of favorable and radiant characteristics; if the burner is of the desired arrangement to take advantage

of the fuel characteristics, then somewhat better results may be obtained without, however, any possibility of reaching anywhere near the target.

If the kiln had continued to be operated at 80 cu. ft. per ton, but improved by a stone preheater and a lime cooler, the fuel ratio would have improved, but since radiation apportioned to fuel burned would have increased, the improvement would have been rather slight with conditions stagnating at "C-3."

The general degree of improvement was greater by mere capacity increase to "C-2," than through kiln elaborations to "C-3." It is only through the combination of both of these improvement trends, that the satisfactory end point at "C-4" would be reached.

These three routes, although not located the same for any two kilns, would apply and be of about the same shape for all kilns, and the ultimate of improvement for all is illustrated by the middle route, which combines in itself operation at maximum capacity with minimum heat loss.

It is very important that this be fully realized when planning kiln improvements or new kiln installations, since if the wrong route is taken it may lead to not only indifferent results, but into a sort of cul-de-sac from which the kiln may never be extricated, never becoming a satisfactory unit, wasting immense sums of money over the years, likely more than the cost of the original installation.

The lighter lines of Fig. 8 represent the improvement trend of some kilns. Those of 1 and 2 may be considered satisfactory if they were carried far enough, while those of 3 and 4 are unsatisfactory as they do not lead toward the target point. In these advantage was not being taken of possible radiation loss reduction through increase of capacity.

# Draft, Temperature and Gas Analysis Surveys

An open rotary kiln in itself requires little draft; even at high capacity hardly more than it creates through its inclination and high mean temperature. Nevertheless, most rotary kiln production is impaired by limited draft. Somehow this seldom seems to be known.

Thus draft at "C" in Fig. 9 may be 10 in. water gauge, and at "H" but 0.1 in. But this is not the flow determining draft; this is at "I" inside of the kiln, which is never measured and where there may be pressure rather than suction. This is due to the gas flow obstruction of the spill dam, the feed pipe, feed pipe hanger and the dust collected thereon.

The diagram indicates points where draft, temperature and also gas analysis may be made. The results will show where undue draft drop or air inleakage occurs, where, in effect, there is a bottle-neck that limits the kiln. The whole system should be plotted for more ready study; the kiln draft "N" to "G," which ordinarily is very low to one scale, the exhaust system and possibly the cooler system to another scale.

The small sketch Fig. 10, indicates where at "H," snugly at the kiln end, a cross sectional survey should be run of gas analysis and temperature of the gases. From this much can be told about the combustion, kiln perform-

ance and performance variability, about gaseous stratifications and often about the functioning of the burner on the other end.

While something is always known about the state of affairs at the two ends of the kiln, nothing much is ever known about conditions down the length of the kiln; such as, conditions at point "J," the approximate boundary between the preheating and calcining zones, and location "K," the approximate mid-point of the calcining zone.

Two such points are the minimum and for a thorough study, especially in case of long kilns, there should be a greater number. Temperature of the gas stream, of the kiln wall, of the stone and lime should be determined at each such point, flame extension observed, and gas samples taken from over the bed and from underneath the roof for complete analysis.

Obtaining a lime sample from each point is important, to be screened into five sizes, and each portion analyzed for respective degree of calcination and also measured for the degree of calcining penetration into the varied shape of pieces of the same screen size.

Such tests are not easy to make, water jacketed gas sampling tubes and high velocity thermocouples are necessary, and the testing must be organized to proceed smoothly, accurately and at a very high speed. The organization for such tests and the assembling and evaluating of data takes time, but it all is well worth while as it gives information ordinarily not even suspected.

Not only are special tests necessary, it also is necessary to participate in the testing. It is only then that results will reach one's consciousness. It is too important to delegate such special work entirely to less vitally interested, or even disinterested and unposted employes.

# Calcining Zone Terminal Temperature Differential Heat Less

All rotary kilns, excepting only such as may have fully effective external stone preheaters, embrace stone preheating and calcining zones, adjoining, but of very indefinite and overlapping boundaries.

The division line temperature between the two should ideally be about 1500 deg. F.; that is, all of the gases would leave the calcining zone and all the stone would enter the calcining zone at this temperature. Operation would be at "Zero Terminal Temperature Differential" which is a theoretical impossibility since there must be a temperature difference to transfer heat.

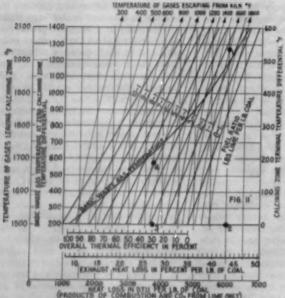


Fig. 11: Calcining sone terminal temperature differential effect on gos temperature and kiln heat loss

In the case of vertical kilns in which the hot gases need to force themselves through a bed of fragmented particles, scrubbing the surface thereof, a temperature differential as low as 50 deg. is possible, although at very high capacity rates it would be some higher but not much. It is mainly due to this that the exhaust temperature of vertical kilns is so low, why their fuel ratio is normally higher.

Unfortunately, in the case of the rotary kiln this is quite different. There is not intimacy of contact between the two media. The main stream and the hottest of the kiln gases pass at high speed along the kiln roof toward the outlet. The gases which travel along the surface of the lime or stone are much cooler, having given up some of the heat, are heavier because they are cooler and are charged with the CO<sub>a</sub> gas from the calcining process. This lower stream travels slower than the upper, having even a greater chance to cool.

Thus, the hottest of the gas stream, the main flow, is furthest from the stone, the coolest is nearest. As the coolest tends to cool further and the hottest tends to remain hot, the degree of flow stratification tends to increase down the kiln line, and none penetrates into the bed except by accidental entrapment.

We may say that the gases passing up the kiln are stratified. They are stratified as to rate of flow, stratified as to temperature and more often than not stratified as to combustible content; that is, unburned gases escaping the calcining zone to burn delayed in the preheating zone. A very unsatisfactory state of affairs results.

This is made more so by the fact that there is stratification of the bed as well. The heaviest of the stone or lime travels the outside (Fig. 6) with the lighter submerged in order of their weight, rotating around the movement center of the mass, the various weights assuming a position dictated by the up and down travel speed.

In case of lime there is replacement. As it loses weight the larger piece would submerge to be replaced by a heavier although smaller piece. In case of stone there is no such replacement. The larger ride the outside and remain there. They gather heat from the kiln gases and from the lining when they pass under the bed. This heat they in turn conduct to the inner mass. There is no other substantial manner of getting heat into this inner mass, which never appears at the surface and is always at a lower temperature than outer perimeter of bed.

Some of the stone becomes fully preheated early in its travel, other stone not until it is deep in the cal-

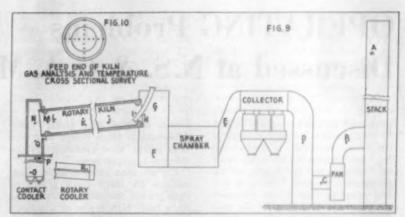


Fig. 9-10: Draft-temperature and gas analysis survey

cining section. Thus the gases that should be calcining are overlapping into the preheating section, where they preheat the stone with heat of a temperature that should have been used for making lime. The stone passing partially preheated into the calcining section is also preheated with heat that should have been making lime.

The result is a very high exhaust temperature, likely 1500 deg. F., which may be found to be more if measured correctly. From this we deduce that all of the stone preheating has been with the heat which should have been making lime.

Gases of calcining temperature are slipping into the preheating section, imperfectly preheated stone is slipping into the calcining section; combined they create a heat loss which often is greater than the kiln radiation loss.

The high exhaust temperature common in rotary kilns is blamed on the preheating zone where it in no manner belongs. There is stratification but otherwise conditions are favorable. The stone is cold and the zone operates at a high temperature head, stone has a high conductivity, and the heat of preheating is only about a third of total heat that needs to be imparted to the bed in the full length of the kiln. Exhaust temperatures are high because of the undue amount of heat being wasted from the calcining zone. In turn, due to this waste and the low lime-fuel ratio (which could also be called stone - gas flow ratio), there is insufficient stone passing through the preheating zone to cool the gases.

It is not possible to determine directly what the loss is due to the calcining zone terminal temperature differential. However, it can be calculated, taking into account exhaust temperature, exhaust gas analysis and the lime - fuel ratio. The radiation loss occurring in the preheating zone upsets this method somewhat and the calculated loss is always lower than the real loss.

There is a certain minimum exhaust temperature for any fuel ratio. Thus, if the exhaust is 500 deg. F. hotter than the supposed minimum theoretical; then the escaping gases from the calcining zone are at least 500 deg. F. hotter or 2000 deg. F. rather than the basic 1500 deg. F. Since calculating this loss is a bit complex, to simplify it Fig. 11 was prepared. It features six factors, the loss due to excess air needs to be figured separately, nor could the effect of radiation be included. But these would both tend to increase the loss as derived from the chart which shows:

- (1) Temperature of the escaping gases
- (2) The lime-fuel ratio for high grade coal
- (3) The basic minimum waste gas temperature
- (4) The temperature leaving the calcining zone
- (5) The calcining zone terminal temperature differential
- (6) Stack loss in B.t.u. per pound of coal and in percent

The chart is best demonstrated by an example, which will be a kiln operating at 10 million B.t.u. with coal of 13,919 B.t.u. high heat value, limefuel ratio 2.78 - 1, exhaust tempera-

ture 1600 deg. F.

On the chart, the condition of 1600 deg. F. exhaust temperature and 2.78-1 fuel ratio is located at point "1." To the left, it reveals that the gases have left the calcining zone at 2035 deg. F. or somewhat higher. To the right, the calcining zone terminal temperature differential was at least 535 deg. F. Directly below point "1," at point "2," the exhaust heat loss is indicated at 6000 B.t.u. per pound of coal, or 43.0 percent of the total heat.

If the kiln at 2.78-1 lime-to-fuel ratio could be operated at zero terminal temperature differential, the point would then be located at "3," Exhaust temperature would be 1050 deg. F.

Continued on page 106)

# OPERATING Problems Discussed at N.S. & G.A. Meetings

E VIDENCE OF THE EFFICIENCY of suitable gravel in the highest types of bituminous mixtures is overwhelming," said Stanton Walker in his paper on "Specifications for Aggregates for Bituminous Mixtures." He gave several examples from recent pavement developments. However, for the sand and gravel industry to take advantage of this three factors must be realized: (1) a real desire to participate in this market to the fullest extent; (2) an understanding of the problems of bituminous mixtures; and (3) an ability and willingness to produce materials suitable for the specific type of mixture required. Then it becomes a combination of salesmanship and engi-

The difference between selling aggregates for concrete and for bituminous mixtures lies in the fact that in the case of concrete one is dealing with a single kind of cementing material, while in bituminous mixtures there is a variety of cementing materials, each requiring a different mixture or different sizes of aggregate. In bituminous mixtures, Mr. Walker said, the bugaboo of crushed stone versus gravel aggregates presents itself. In the coarse graded, relatively thick surfaces, it is evident that stability is influenced significantly by the shape of aggregate particle. In very thin surfaces it is obvious that the base must be depended upon for stability and that shape of particle is of less importance. For the dense grade mixtures, it is the mortar matrix which is principally responsible for stability. Further, he said, it should be evident that the problem revolves around shape of particle per se rather than the question of whether the material is crushed stone or gravel.

After reviewing some typical specifications for bituminous pavements, Mr. Walker said: In general, the more rigid specifications for surface treatments provide for crushed particles and the more liberal, or should we say more enlightened, do not. As to the Asphalt Institute, it is in the process of revising its specifications and it can be hoped that it will take a new look at requirements for crushed particles. About half the states that have specifications for surface treatments provide for the use of gravel with some requirements for crushed particles and only five states limit the aggregate to other than gravel. These differences in policy reflect, to a very large extent, local availability of the different aggregate types.

For so-called mixed-in-place bases, surfaces are either dense graded or open-graded, the latter usually calling for a fairly high degree of angularity in the aggregates. Plant mixtures, particularly, according to Mr. Walker, offer large potential for marketing gravel. These range from the relatively "low grade" cold mixes to the hot mixes using penetration asphalt. For the most part they are, or can be, dense graded mixes which may be designed on the basis of the strength measured by test, a better measure of their stability in the road than any considerations of angularity.

Mr. Walker said that what was most needed were actual performance tests of the bituminous mixture itself; he believed that such tests would open the way for the use of many gravels in high type mixes where they are not now admitted. In closing his discussion he said: "If you need a market in the bituminous field, you can secure it by informed promotion of the efficiency and economy of gravel in that type of construction."

# A Test No More Reliable than Sample

Importance of getting a representative and accurate sample was stressed by C. E. Proudly, chief materials engineer, North Carolina State Highway and Public Works Commission. Mr. Proudly told about his experience in checking two samples of gravel representing 12 cars for use in a bituminous paving mixture. After two days of delays to the contractor, time lost by producer employes, laboratory tests and long distance telephone calls, it was found that the samples were improperly taken. It was suggested by Mr. Proudly that someone may come up with a test for samplers of aggregates which will be analagous to the certification of welders.

Turning to the question as to how representative a sample may be, Mr. Proudly said that to know how much a product varies in quality and gradation a number of samples must be taken at definite intervals. He said that statistically, ten samples or more should be obtained to give reliable data covering the time during which

the sampled material was produced, but a minimum of three samples are required to give some basis upon which to judge the variation in the product. Producers were urged by Mr. Proudly to build up a file of test reports which will show the usual range of quality and the extremes from which data an average can be computed.

When developing a new deposit, Mr. Proudly recommended setting up a program of sampling as soon as feasible after beginning production to see whether trouble might be expected from non-uniformity. He said that continuous daily sampling should be considered a necessary part of operations whether old, new, temporary or permanent. Before production is started, a survey should be made of the deposit to plot the variations which will be encountered as operations are expanded.

Mr. Proudly recommended that when a new plant is designed provision should be made for convenient sampling at the point where it will do the most good. The producer should know whether the material being loaded out complies with the purchaser's wishes and therefore samples should be taken from the load-out chute or belt. He suggested making the operation as mechanical as possible and also safe for the sampler. Mr. Proudly said that there is as much reason for the sand and gravel producer to provide laboratories and qualified technical personnel for the control of the products which they produce as there is for the steel mills to follow their ma-

Samples for quality should be taken from the finished product, said Mr. Proudly, as this allows for some drying out, some degradation of softer particles and provides for a condition which can be reproduced in samples taken at some time after delivery. He said that samples should be taken just before the material is loaded into the conveyance. Sampling from stockpiles or bins should not be permitted if the producer can talk inspectors out of it. If the inspector still insists that stockpile and bin samples be taken, a power shovel or dragline should be provided to cut all the way through the stockpile at several points, and a dumptruck with laborers and hand shovels should be available to quarter down

the large-sized sample (several tons) from a bin. Make sure that the inspector takes lots of samples and ask him to have each sample tested separately.

# **Abrasion Resisting Materials**

Some practical experiments of the Warner Co., Philadelphia, Penn., in an endeavor to prolong the life of wearing parts were discussed in a paper, "Abrasive Resistance of Various Materials Used in Sand and Gravel Production" by E. Norman Bernhardt, Jr., maintenance superintendent of the company's Van Sciver plant. This is a continuous bucket dredge operation with very large capacity.

The main point of Mr. Bernhardt's paper is that producers, if they will, can often find a better steel for their particularly troublesome installations if they will confer with their local foundry or supplier. This is being done with very favorable results.

A study originated in December, 1953, due to discovery of a large difference in thickness between two worn discs in one of the crushers. Further investigation revealed that very often there was a large variation in thickness between two worn bushings in the same club link in the main bucket line, which is made up of inside links, outside links and club links to form a chain.

In the case of both the club link bushings and the crusher discs, the respective parts had been installed new at the same time in the same unit and had been in service for the same time and production. Services of a consulting metallurgist were enlisted for a study of the reasons and that investigation expanded to include different types of wear-resistant materials as well as changes in design.

Hardness and composition comparisons were made on sections of the discs and bushings and photomicrographs were made to study grain size. Tiny blowholes and abnormally large grains were indicated in the inferior sections and it was impossible to refine the grain annealing because it was "burned in."

Two different types of steel were supplied by the foundry for pins and bushings. One was Hatfield steel with vanadium added and the second was an experimental manganese-chromium-molybdenum steel of greater initial hardness. After 12 weeks of service in combination with manganese steel for comparison, it was disclosed that the vanadium additions increased the life of the manganese steel and that the experimental steel was superior to either of the others. On the pins it registered ½-in. less wear than the plain manganese steel pin and the ex-

perimental bushing showed  $\gamma_c^2$  in. less wear. The manganese steel work hardened from a Brinell of 196 to 302, the manganese-vanadium steel from 228 to 477 and steel "X" from 387 to 512.

Although this special steel performs well in these particular applications, Mr. Bernhardt does not look on it as a cure-all or replacement for all his manganese steel applications. He considers manganese steel to be a good "middle-of-the-road" steel for impact and abrasion.

He commented on the merits of hardened forged alloy steel which have increased the life of dragline or shovel bucket up to a ratio of 3:1. This steel, he said, does not have the toughness of manganese steel and the danger of breakage is present in quarrying operations where the material is hard and the impact great. The forged steel, in his experience, seems to lend itself best where the material is fairly loose and the problem is largely abrasion.

In selecting a new type steel, he said the secret is to obtain a proper balance between strength and hardness which will equal the balance between impact and abrasion. Procedure should be to start with the present hardness and strength and increase the hardness in small increments rather than risk failure.

Mr. Bernhardt has found that rubber, when properly installed in certain applications will outlast mild or hardened steel about 4 to 1 and manganese steel at least 3 to 1. As a result, rubber has almost completely replaced steel for use in sand dump tables and chutes in his operation. One of the local rubber distributors supplies rubberfaced metal plate in thicknesses from 1½ in. to 1½ in. for such purposes. Rubber-faced metal plate is considerably cheaper than manganese.

Rubber is not considered a cure-all and does not lend itself to every chute lining application. Mr. Bernhardt had design sheets available showing the recommended thickness of rubber for an installation. As a general rule, he said that the slope of a rubber-lined chute must be increased five degrees to permit the same material velocity as in a steel lined chute. A jet of water may sometimes be used to wash the material down the chute if it is not practical to increase the slope.

Rubber-covered perforated plate has been tried on a vibrating screen with some success. Initial cost was three times that for standard screen plate but life was three to four times as great and there were savings in labor for changing screens. Also, use of square perforated plate to replace wire cloth on rotary screens has proven successful.

On the subject of attempts to increase life of crushers, he said:

"In an effort to increase the life of the mantle and bowl liner in the cone crusher on our Dredge Franklin, we sent a worn section from each liner to our cone crusher manufacturer to have a "wear curve" plotted. Since this curve indicated that the greatest wear occurred near the bottom of these liners, our manufacturer recommended a "stepped" type liner with the metal thickness increasing toward the bottom. The purpose of the two steps was to provide three separate crushing zones and improve the angle of nip to prevent the gravel from squeezing out instead of being crushed. In the beginning of the trial run, the crusher had to be set more often than with the former type since compensation was being made for wear on a relatively small area. However, the total vertical travel distance permissible from the time the parts are new until they are worn out is much greater on the new design,

"Due to the fact that the dredge sank last November 23, I am unable to present at this time, any final results or benefits derived, if any, from these liners. It may, however, be well to point out that through this change in design, the total weight of mantle and bowl liner was reduced about 400 lb., resulting in a saving of about \$218 or 15 percent of the initial cost."

### Removing Deleterious Particles

"The Application of Jigs to Remove Deleterious Particles from Sand and Gravel" was the subject of a paper by E. B. Sheets, superintendent of the Chillicothe, Ill., plant of McGrath Sand and Gravel Co., Inc., Lincoln, Ill. The paper was read by Stanton Walker in the absence of Mr. Sheets.

The use of jigs was decided upon for the removal of coal and ochre, principally, from both the sand and the gravel, after the author had made exhaustive studies of the various available processes in many areas of the country. Economics were a consideration in the selection.

McGrath Sand and Gravel Co. has been concerned with this problem of upgrading the quality of its sand and gravel over a period of many years. Disintegrators, log washers, ripple tables, screw washers, scrubbers, air pressures and even electricity have been used over the years with various degrees of success. None of these methods proved completely successful and the problem of cleaning large tonnages has continued to be a difficult problem.

Original investment cost and operating cost of the available methods led to the selection of jigs to do the



Jig installation at McGrath Sand & Gravel Co., Chillicothe, Ill., which is doing an effective job in removing deleterious materials. Equipment located above bins

job, following studies of separating methods used in other sand and gravel operations, and the use of jigs in the coal fields and the iron ranges. Most jigs were found to have low capacity but to be doing a good job. The one manufactured by Meckum Engineering, Inc., Ottawa, Ill., however, was observed to have the necessary production potential and was the type adopted.

This jig has a pulsation rate of about 160 strokes per minute and there were three cast steel hutches attached to the main diaphragm on the lower part of the jig. Material is fed in at one end and, by the principle of water stratification, is jigged the entire length of a feed table. Fines pass through heavy slotted acreens at the bottom of the feed table and out of the hutches.

Stratification begins as soon as the feed material hits the bed or main body of the jig, with the lighter specific gravity fractions coming to the surface and the heavier materials going to the bottom. The lighter materials are skimmed off at the discharge end and wasted, and the heavier materials, in the case of Chillicothe, are discharged into a loading bin. Capacity of these particular jigs is 60 t.p.h. and each has a 10-hp. electric motor.

A test jig was first installed in 1952 for experimental purposes, and exhaustive pilot plant data were accumulated through the summer of 1952 and 1953. Based on these tests, the equipment was installed for full-scale production for the 1954 season, to clean concrete sand and 1-in. gravel.

In the treatment of concrete sand, it was concluded that a satisfactory cleaning job would be done if the particles of coal and ochre above the No. 8 mesh screen size were removed. Accordingly, a vibrating screen was installed to separate minus 8-mesh material from plus 8-mesh, minus 36-in. material and the coarser fraction is jigged. After jigging, the coarse fraction is blended back with the fine fraction and loaded into bins. About 99 percent of the deleterious materials are removed by this process and, as a result, it has been possible to develop additional markets.

In the jigging of gravel, best results are obtained from a feed of material graded within specified size limits. For example, a 36- to 1-in. material, and a 1- to 1½-in. material should be jigged separately. It has been found that jigging results in no change to the gradation of the gravel.

Results of tests show that coal, lignite, ochre and other of the bad deleterious materials have a specific gravity of 2.25 and less, and that more than 95 percent of these materials are removed. Untreated gravel has a Los Angeles Rattler loss of 28.3 percent and treated gravel has a loss of 23.1 percent. These tests indicated that there are deleterious materials of up to 2.45 specific gravity. Some of these materials are removed through jigging, particularly when jigged a second time. Loss of gravel through jigging is 3.08 percent of the total material handled.

Three jigs are run by one man. Total connected power load is 1671/2 hp. including the jigs, conveyors and water pumping. Jig repair part costs for an entire season are very slight since there are few wearing parts. Each jig requires about 400 g.p.m. of water at 50 p.s.i.

Results from the use of jigs for cleaning gravel have been satisfactory but have not yet been perfected to the degree obtained in treatment of the sand. It is believed that the results from further experiment on gravel will reach the level of performance attained for sand.

# Thermal Incompatibility Bogey

ONE OF THE ILLS OF CONCRETE agitated for several years past, particularly by the laboratories of the Corps of Engineers, U.S.A., is the bogey of the alleged incompatibility of mixtures of different mineral aggregates, such for example as limestone and silica sands. This factor appears to have been laid to rest, at least for the time being in a paper by Delmar L. Bloem, assistant director of engineering, N.S. & G.A. and N.R.M.C.A. His paper was entitled "What About Thermal Compatibility?" Much the same data appeared in the December Journal of the American Concrete Institute, Part 2 (closing discussions of 1954 proceedings) where it can be read by concrete engineers and users.

Mr. Bloem, after some general remarks about jumping to conclusions, often erroneous, said that "The thermal compatibility" idea is a striking example of how far astray the investigator can be led by the misapplication of statistics. A combination of "post hoc" reasoning, the mistaking of simultaneously occurring events as positive evidence of cause and effect, and the use of erroneous procedures for adjusting and interpreting data have all contributed to a widely held impression which is at variance with proven facts."

The historical review of the subject, given by Mr. Bloem, dates back to a paper by the late J. C. Pearson in the Journal of the A.C.I., December, 1941. After a period of quiet, the subject was again agitated in a paper

by Albert Weiner in the Journal of the A.C.I. for May, 1947. Next was a paper by Edwin J. Callan, Journal of the A.C.I., February, 1952, in which he attempted by the use of statistical data to show a general relationship between freezing and thawing resistance of concrete laboratory specimens and the differences in the thermal coefficients of the coarse aggregates and the mortar. The thermal coefficients are measures of the differences in thermal expansion.

The engineering and laboratory staff of the N.S. & G.A. and the N.R.M.C.A. began research to test the validity of Callan's conclusions. Their findings were first published in the Journal of the A.C.L in April, 1952. The discussion was reviewed in the October, 1953, Journal of the A.C.I. in a paper by T. B. Kennedy and K. Mather, on the "Correlation Between Laboratory Accelerated Freezing and Thawing and Weathering at Treat Island, Maine" - a project of the Corps of Engineers. The association laboratory at the University of Maryland continued its researches, the most recent report being the thesis of R. D. Gaynor. From the data thus accumulated and digested by Stanton Walker and Mr. Bloem, the latter concluded his paper with these remarks:

"It may seem that this discussion places too much emphasis on a subject of questionable importance. That would be so if the 'thermal compatibility' concept had not been taken so seriously that certain aggregate combinations have been avoided for fear of its consequences. In his original paper, previously cited, Callan suggested that a difference of as much as 3.0 x 10- per degree F. between the thermal coefficients of coarse aggregate and mortar 'should lead to caution in the choice of the aggregate combination.' For several years the Corps of Engineers of the U. S. Army has used tests for thermal coefficient as one of its several bases of evaluating the acceptability of aggregates. Engineers in foreign countries have taken up the cry and are suggesting that thermal properties of concrete ingredients are characteristics to which great importance must be attached in determining their acceptability.

"What then is the evidence upon which all of this concern has been based? Briefly it is this:

"(1) A concrete failure attributed by Pearson to a coarse aggregate of low thermal coefficient, although other unusual and even abnormal factors were acknowledged to have contributed to, if not to have been the principal cause of, the failure.

"(2) A large amount of theoretical discussion and analyses of stress con-

ditions suggesting that differences between thermal coefficients or diffusivities of coarse aggregate and mortar could cause disruptive stresses upon change in temperature. All of these analyses have, of necessity, been founded on assumptions as to the elastic and plastic behavior of cement paste, mortar and concrete. Without verification by actual tests, they must be relegated to the status of interesting mathematical exercises which do not necessarily relate to conditions.

"(3) A hypothesis by Weiner that differences in diffusivity between coarse aggregate and mortar could cause disruptive stresses in the concrete. The hypothesis was developed to explain differences in durability between two coarse aggregates, both of which seemed to be satisfactorily sound. The author of post hoc reasoning employed is harmless when, as in this case, it is clearly admitted speculation. Certainly there were too many other variables involved to permit the serious contention that diffusivity characteristics were wholly or even principally to blame.

'(4) The attempt by Callan to prove by statistical correlation, for a large number of concretes tested in laboratory freezing and thawing, that thermal coefficient differences had a measurable effect on durability. While correlation was statistically fairly, but not highly, significant, examination of the data showed an inter-relation between coefficient differences and other factors which made it impossible to establish which was responsible for the variations in durability. The nature of the laboratory tests, involving very rapid temperature changes, was such that overall thermal coefficient of the concrete was of more significance than thermal coefficient differences.

"(5) Statistical analyses by Kennedy and Mather of the relationship between thermal coefficient differences and freezing and thawing resistance of a number of concrete combinations tested in the laboratory and exposed to severe outdoor weathering. These data, in unadjusted form, showed no significant correlation between coefficient differences and freezing and thawing resistance. The insignificant correlation shown was contradictory to the 'thermal compatibility' hypothesis in two out of three cases. The authors used the system of 'adjustment' developed by Callan in an effort to eliminate effects of extraneous variables and isolate the influence of thermal properties. The system of 'adjustment' was shown to be invalid and the resulting good correlations of no significance with respect to the 'thermal compatibility' concept.

"(6) Carefully controlled tests by Mullen and Gaynor, made specifically to study the effects of thermal properties on resistance of concrete to heating and cooling without the complicating effects of freezing. No relationship between thermal coefficient difference and resistance to temperature changes was found.

"Factual evidence that the difference in thermal coefficient between coarse aggregate and mortar affects concrete durability is conspicuously absent. In fact, published data, even of the proponents of the 'thermal compatibility' theory, provide convincing proof that differences in thermal coefficient between concrete ingredients need be of no particular concern. It is to be hoped that, at least until valid evidence comes to light, the undue emphasis on thermal properties as a partial basis for selecting concrete ingredients will be dropped."

# Operating Problems—Ready Mix

E FFECT OF CURING CONDITIONS ON COmpressive Strength of Concrete Test Specimens" was the subject of a paper by assistant director of engineering D. L. Bloem at a session of the N.R.M.C.A. This paper was based on a comprehensive research project conducted in the laboratory of the two associations. The data demonstrated the very serious penalties in compressive strength which follow when test cylinders are not subjected to standard curing procedures. They also showed that greater reductions in strength may follow such deviations from standard procedures when certain special cements and blends are used.

Specifying concrete on the basis of strength is coming in more and more, said Mr. Bloem, and thus makes the problem of more attention to proper treatment of test specimens of greater importance. Violations in methods of protection and curing of test specimens are most serious and, he pointed out, the A.S.T.M. requirements are more often violated than observed.

The study revealed that air storage, even for relatively short periods and regardless of temperature, caused significant reductions in measured strength. The longer the delay before specimens were put into standard moist room storage, the greater was the strength reduction. Losses in strength amounted to as much as 50 percent.

The data in the report showed the extent of losses to range as high as 2000 p.s.i. under certain adverse con-

(Continued on page 108)



Banquet scene at the National Agricultural Limestone Institute convention in Washington, D. C. At the head table are seated the

# **AGSTONE Producers Seeking Ways To**

National Agricultural Limestone Institute convention in Washington, D. C., sets up new committee on public relations. Status of percentage depletion and soil conservation program of much concern to producers

More Than 500 were registered at the tenth annual convention of the National Agricultural Limestone Institute held January 17-18 at Hotel Statler, Washington, D. C. More than 100 senators and congressmen, and many national and state agricultural administration officials were among guests of the industry's largest convention.

The heavy registration reflected substantial growth in membership, particularly this past year when 87 new producer members joined the association. Active producer memberships totalled 391 at the time of the convention and, in addition, the Manufacturers' Division has had substantial growth since its formation in 1953.

These increases in membership were achieved as the result of a concerted drive to enlarge the association, and were accomplished in a year when the

agricultural limestone industry as a whole suffered substantial loss in tonnage due to the mandatory soil test and other government actions that were restrictive in their effects.

As membership has been increased and because many producers of agricultural limestone are also producers of commercial crushed stone and other limestone products, there has been a growing interest in how the association might render its members a service in these other fields. This subject was discussed by the board of directors and in open meeting with the thought of merging the efforts of N.A.L.I. with the efforts of the National Crushed Stone Association in order thereby to give service and representation to those members in N.A.L.I. who are in both businesses.

A resolution on this question was passed unanimously as follows:

"Whereas, the directors of the National Agricultural Limestone Institute recognize the need for a special program of service and representation for that considerable portion of its membership who are crushed stone producers, and

"Whereas, said directors have this day authorized the appointment by the president of a committee charged with the responsibility of studying for recommendation future course of action,

"Be it resolved, therefore, that the said directors and members extend to the directors of the National Crushed Stone Association, a request for the formation of a similar committee for the purpose of considering jointly such actions as may be taken to further the common interests of both organizations."

In the discussion, it was brought out that the committee as set up would have no authority to act and would function simply for the purpose of developing information. It comprises Robert Patton of Ohio (chairman); Leonard Fry, Pennsylvania; William Hewitt, Illinois; Clarence Munz, New York; and R. T. Willingham, Georgia.

### **Convention Program**

Individual committee meetings, the executive committee meeting, and the board of directors meeting were held immediately preceding the convention.

The convention program started with



Left to right: H. C. Gray, Acme Materials Co., Tulsa, Okla.; Robt. M. Koch, executive secretary, N.A.L.I.; John M. Deely, Lee Lime Corp., Lee, Mass.; Sen. Frank Carlson, Republican, Kansas; John H. Riddle, president, N.A.L.I., Riddle Quarries, Inc., Salina, Kan.; and Leonard S. Fry, first vice-president, N.A.L.I., Fry Coal & Stone Co., Mercers-



officers of the association and members of Congress

# Stimulate More Sales

a business session at which the reports of the separate committees and of the officers were heard. Remainder of the sessions was made up of four separate panel discussions, on promotion of agricultural limestone sales, on the agricultural conservation program, percentage depletion and plant operations.

Presiding officers for the separate sessions were president John M. Deely for the opening business session; W. D. Dillon for the panel on promotion; executive secretary Robert M. Koch for the panel on the agricultural conservation program; Earl L. Heckathorn for the panel on percentage depletion; and Robert M. Patton for the concluding session on plant operations.

Leonard S. Fry presided for the annual Greeting Luncheon at which executive secretary Robert M. Koch spoke on the subject "Ten Years of Organization — Where to Now?" Senator Frank Carlson, Kansas, spoke on the subject "Conservation of the Soil — Our Greatest Resource" at a well-attended luncheon presided over by first vice-president John H. Riddle. Social functions comprised a get-together party which included cocktails, buffet supper and dancing, and the annual banquet at which Congressman Jamie L. Whitten was featured speaker.

### **Future Meetings**

Eleventh annual convention of the association is scheduled for the Blackstone Hotel, Chicago, Ill., during the first week of February, 1956, the midyear meeting of the board of directors will be held in Cleveland, Ohio, June 9 and 10 and the 1957 convention will be January 19-23 at Hotel Statler, Washington, D. C.

### **New Officers**

John H. Riddle, president, Riddle Quarries, Inc., Salina, Kan., was elected president of N.A.L.I. to succeed John M. Deely, Lee Lime Corp., Lee, Mass. Leonard S. Fry, president, Fry Coal and Stone Co., Mercersburg, Penn., is the new vice-president; Miss Elizabeth Gray, Cedar Bluff Stone Co., Inc., Princeton, Ky., was elected secretary; Alvin R. Armbrust, president, Fayette Limestone Co., Inc., Washington, C. H., Ohio, was re-elected treasurer; and Robert M. Koch was re-elected executive secretary.

Elected to the executive committee were Arthur R. Alvis, Butler, Mo.; William S. Black, Quincy, Ill.; John M. Deely, Lee, Mass.; Leonard S. Fry, Mercersburg, Penn.; Joseph J. Griesemer (2 yr.), Billings, Mo.; W. H. Litteer (2 yr.), Watertown, N. Y.; Floyd H. Millen (2 yr.), Farmington, Iowa; J. B. Mount, Shouns, Tenn.; Arnold

Mulzer (2 yr.), Tell City, Ind.; and Robert M. Patton, Columbus, Ohio.

Regional vice-presidents are R. T. Willingham, Atlanta, Ga. (Region I); Philip E. Heim (2 yr.), Lowellville, Ohio (Region II); Sam Davis Bell (2 yr.), Nashville, Tenn. (Region III); Larry Fay (3 yr.), Chicago, III. (Region IV); and L. R. Falk (3 yr.), St. Ansgar, Iowa (Region IV).

Elected to the board of directors for three year terms, except as noted, were the following: P. D. Archibald (1 yr.), S. Bethlehem, N. Y.; Robert Bridges (1 yr.), Chicago, III.; W. L. Bryan, Northfield, Minn.; W. A. Canary (1 yr.), Footville, Wis.; William F. Childs, Waukesha, Wis.; Buford V. Everett, Plattsburg, Mo.; E. C. Farrar (chairman, Manufacturers' Division), American Cynamid Co., Latrobe, Penn.; Dana G. Farber, Franklin, N. J.; Miss Elizabeth Gray, Princeton, Ky.; Herbert C. Gray, Tulsa, Okla.; A. K. Hausmann, Cleveland, Ohio; William E. Hewitt, East St. Louis, Ill.; Russell W. Hunt, Neosho, Mo.; Jules E. Jenkins (Manufacturers' Division), Vibration Measurement Engineers, Chicago, Ill.; R. C. Johnson (Manufacturers' Division), Simplicity



Left to right: H. L. Manwaring, Commodity Stabilization Service, USDA, Washington, D. C.; Donald A. Williams, Soil Conservation Service, USDA, Robt. M. Koch, executive secretary, N.A.L.I.; Fred G. Ritchie, ACP Service, USDA; and Lewis I. Jones, Coordinator, Crasslands Programs, USDA.



Left to right: David Petrie and Joe Huffman, M. J. Grove Lime Co., Stephens City, Va.; Earl P. Easton and Edward D. Grove, Jr., M. J. Grove Lime Co., Lime Kiln, Md.; and Ray H. Smith, Farmers Cooperative Association Inc., Frederick, Md.

Engineering Co., Durand, Mich.; K. K. Kinsey, Cedar Rapids, Iowa; R. B. McNab, Knoxville, Tenn.; W. H. Margraf, Columbus, Ohio; Clarence A. Munz, Utica, N. Y.; John H. Riddle, Salina, Kan.; Fred E. Roberts, Norristown, Penn.; Thomas B. Stafford, Proctor, Vt.; Lynn Stewart, Columbus, Ind.; William E. Stone, Piqua, Ohio; and F. E. Wholaver, Bellefonte, Penn.

Other officers of the Manufacturers Division are: vice-chairmen, senior, Jules Jenkins and Ralph C. Johnson; vice-chairmen, junior, Geo. S. Harvey and Phil Alvord; secretary, W. H. Van Buren.

The foregoing newly elected directors comprise one-third of the total of 60 which is elected annually, and new directors elected to fill vacancies which expire in 1956 and 1957.

# **Business Session**

President John M. Deely presided for the opening session of the convention which began with the showing of a movie, "Greener Pastures in North Carolina" produced by the North Carolina Extension Service. Campbell Limestone Co. and American Limestone Co. participated in production of the film which was designed to stimulate interest in better farming.

In calling the convention to order, President Deely was enthusiastic with the growth in membership in 1954 which he thinks is the greatest for any trade association. He called attention to the fact that private purchases of agricultural limestone have been increased from one million tons a few years ago to seven million tons annually, without government participation, which he attributes to the growing emphasis on selling. He credited the 15 percent percentage depletion benefit to the work of the association.

Following reading of the minutes of the previous meeting and the treasurer's report, the report of the legislative committee was read. This committee has been very active in selling senators and congressmen on the need for a sound agricultural conservation program.

Beginning in 1954, 50,000 farmers were surveyed, including all of them in four states, and the result was overwhelmingly in favor of continuing the soil conservation program. Results of the survey were presented to the House and Senate appropriations committees. Executive secretary Robert M. Koch has testified before these committees, and the services of nationally-known agronomists and other experts were also enlisted to testify.

Congressional authorization was forthcoming to increase the agricultural conservation funds from \$195 million to \$250 million for the 1955 program. The A.C.P. program has been extended until December 31, 1956.

While 1954 was not an active legislative year, the committee and association staff have continued active in hearings and in the general promotion of soil conservation among congressmen and senators.

The problem of most immediate concern is the Holland amendment to the 1954 Agricultural Act. This amendment by Senator Holland of Florida requires farmers to stay within all acreage allotments in order to be eligible for conservation program payments. This particularly adversely affects farmers who grow corn and wheat to feed their own livestock, and many of whom could not forego the practice so that they might qualify for assistance.

Another committee reported on progress made in obtaining a closer working relationship between N.A.L.I. and state and regional groups. Several new local organizations have been formed and the Washington staff has been actively working with them throughout 1954.

Very favorable reports were given by the membership and associate membership committees. Having added substantially to producer memberships in 1954, the committee is setting its sights on a goal of 600. Associate membership comprises equipment suppliers, local suppliers and others engaged in the promotion of agricultural limestone sales. A total net increase of 40 members was achieved in 1954, bringing the membership to 112.

The promotion committee summarized its activities in providing advertising and promotion pieces. One of its latest pieces is entitled "For Those Who Follow in the Furrow" and a Dairy postcard in natural color which ties in the use of liming for increased milk production. The very successful piece, "Lime Your Pastures," has been reprinted. It is planned to continue publication of the "Sales Promoter" and to prepare a new folder on the subject of "Emil" disease.

The budget committee reported that the association is operating within its income and presented figures to prove that travel expense and other expenditures to increase membership have been paid for three times over through resulting increased dues received. The 1955 budget will be the same as in 1954 despite the fact that the Washington staff has been increased. Its newest member, Kenneth White, was introduced.

# **Executive Secretary's Report**

Robert M. Koch gave his report in the form of a feature address entitled "Ten Years of Progress — Where to Now?" which was presented at the Greeting Luncheon. Mr. Koch briefly reviewed activities since the original N.A.L.A. was founded in 1945 and its merger with N.A.L. two years ago. He also commented on the expanded services available to members.

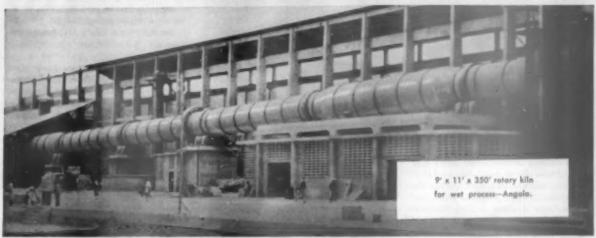
Stress was put on the big job ahead for the industry in establishing greater understanding among those who hold official power over administration of the soil conservation program. Decentralization of the program so that more and more soil conservation policies are now set at the state level has materially changed activities of the N.A.L.I. staff. Staff members travelled into 23 states in 1954 for the purpose of meeting policy-making officials at the state level and in attending statewide meetings and generally promoting agricultural limestone. This type of activity is to be continued in 1955.

Mr. Koch presented a large chart to show the trend in use of agricultural limestone and the job to be done. He pointed to the established annual need for 80 million tons spread annually on the nation's farms and the fact that 30 million tons is the maximum yet achieved. It was pointed out how the federal soil conservation program provided the stimulus which raised annual tonnage from 1½ million

# FOR TOP



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Sen. Corlson, Republican, Konsas, left, Jehn Riddle, president and Elizabeth Gray, Princeton, Ky., secretary

to 30 million in 1947. His chart also showed how direct purchases by farmers have steadily increased during the life of the A.C.P. program from one million tons to seven million tons annually. This is a measure of the acceptance of liming and the results from effective sales promotion.

Mr. Koch used these figures to substantiate the emphasis that has been placed on legislative activity by the association in order to get an adequate job of liming done. Most of the early activity was on that phase and, more recently, association activity has accelerated in the fields of promotion and other activities needed by the industry.

According to Mr. Koch's figures, only 20.6 million tons were applied in 1953, as compared to 27.2 million tons the previous year and the 1954 performance will have showed further decline. This he attributed to changes in the operation of the A.C.P. which have discouraged farmer participation. Among them were reduced appropriations, unworkable regulations and the mandatory soil test requirement. Some states have had less than 50 percent as much farmer participation, as a result, compared to a year ago.

This failure to maintain and improve soil fertility is the concern of everybody, Mr. Koch maintained, lest we suffer the eventual fate of India and China which resulted from soil depletion.

The fact that it is the duty of all to protect our soils by soil conservation practices was pointed to as the basis of the association's legislative activity. Every two years there is a one-third turnover in official Washington, he said, and less than ten percent of new-comers have any training in agriculture. New congressmen must be educated into the importance of soil conservation, he said, or they would be inclined to think that funds for the purpose are simply subsidies for the

farmers or the agricultural limestone industry.

industry.

Mr. Koch told of the farmer survey conducted by the association and how the very favorable returns on the soil conservation program were put to use in Congress. He concluded with comments on percentage depletion, and on the Holland amendment which he anticipates may be repealed.

### Promotion

A good number of questions and answers featured the panel session on promotion. Panel members Charles Coburn, Waukesha, Wis., W. F. Childs, III, Towson, Md., and chairman W. D. Dillon, Columbus Junction, Iowa, had no formal presentations but answered many questions from the floor.

The session started with a short talk on advertising by Norman Simpson who has an advertising agency in Lee, Mass., and who functions in an advisory capacity to the association's promotion committee.

Mr. Simpson first emphasized that producers must realize that they have a great thing to offer the farmer. He broke the year down into working hours available for selling, to stress the point that salesmen actually have few hours relatively to do their actual selling work and therefore must be recognized as the most expensive workers in a company.

Advertising was pointed to as a means to make these limited hours effective. The five steps to a sale, he said, are (1) contact making, (2) arousing of interest, (3) creating a preference, (4) filling the individual's needs and (5) closing the sale. Preselling through advertising takes care of the first three items and leaves the salesman free to concentrate on the last two items. He said that advertising cannot be expected to accomplish these two items and that sales follow-up is necessary to advertising or it cannot be effective.

H. A. Wendler, Highway Equipment Co., Inc., Cedar Rapids, Iowa, said that there is a need for more doorbell-ringing to get across to the farmer that liming will pay him more dividends than anything else he can buy. He believes that prices should be raised in order to permit agricultural limestone to be merchandised properly. He believes a salary and incentives to be the most effective remuneration for salesmen.

John M. Deely auggested that meetings be called where all persons involved, including agronomists from colleges and Extension Service personnel, would be invited. Such a liming conference can be very effective in interchange of information, he said, in pointing to his own experience. In his own case such a conference brought out that liming was at too low a level and fertilizer was being wasted as a result because it was not sufficiently available to the soil. The upshot was that technically-minded people started to cry out for more liming.

Mr. Deely said that the industry must get a high enough price for its product so that it can hire the necessary salesmen to get the story across that liming material is the best buy available to the farmer.

A question was brought up as to the percentage of gross sales that should be allotted to promotion. Charles Coburn said he spends two cents per ton of sales for the purpose. His company has no salesmen but does a lot of advertising. Among items used are a seed tester costing 41 cents each and available from Brown & Bigelow, which is given farmers to test seed germination. Posters available from the Iowa Agricultural Limestone Association are used for advertising in addition to extensive newspaper advertising and radio. Newspapers have proved so effective that 21 are used. N.A.L.I. pamphlets are sent to new farmers and have proved their effectiveness in pulling sales. Mr. Deely believes that 5 to 10 percent of gross sales should be for promotion.

Considerable discussion developed as to the best forms of advertising. W. E. Stone, Piqua, Ohio, who has had many years of experience, believes that direct mail yields the greatest return for least cost. However, he has found the maintenance of up-to-date mailing lists to be of utmost importance. He seeks to reach the leaders—not followers — among farmers and gets good names from dealers. Two mailings are made annually to 10,000 names. Mr. Stone believes that there is too much waste circulation in radio and newspaper advertising.

Another producer said that he has put dealers and truckers on his list to

receive releases. It was brought out that assessors' offices and the A.C.P. itself might be good sources of lists. A suggestion was made that a return postcard be mailed out once a year, requiring that the recipient sign and return it, and that mailing be first class.

W. F. Childs III said that the use of N.A.L.I. releases as stuffers with statements proved an economical way of advertising. He believes personal contact to be of utmost importance, and service in showing the farmer how to sample and test his soil. His company has pH equipment and runs soil tests, and also has spreading service.

Arthur Alvis, Butler, Mo., set up a "100-ton club" for farmers using 100 tons of agstone. Certificates are issued to members and a box of cheese is sent to each for Christmas. Less expensive gifts are given farmers buying 25-75 tons and to those using less than 25 tons.

News releases from N.A.L.I. are supplied newspapers by some newspapers and messages are stapled to orders by others. Mr. Dillon described the 12- x 25-ft. billboards used by Iowa producers. There will be 43 such signs in use on Iowa highways this year, each carrying an appropriate message. This service, which has been discussed at previous conventions, is available to other producers and they are now in use in several states.

### **Agricultural Conservation Program**

Four ranking administrators of the Department of Agriculture, each representing an organization within the department having an important part in the A.C.P. program, comprised a panel, with Robert M. Koch as chairman, for the purpose of discussing the new program and clarifying administrative procedures. After brief remarks from each member there was a period for questions and answers.

The panel comprised Fred G. Ritchie, Acting Administrator, Agricultural Conservation Program Service; Donald A. Williams, Soil Conservation Service; Lewis I. Jones, Coordinator, Grasslands Programs Extension Service; and H. Laurence Manwaring, Deputy Administrator for Production

Adjustment.

Mr. Ritchie said that the sole purpose of the A.C.P. is to help increase soil conservation and to share the cost with farmers for essential conservation; but that A.C.P. is only part of a total program comprising research, education and technical service.

Mr. Williams identified the Soil Conservation Service as the technical arm. As a matter of policy, the government tries to do for the farmer what they cannot accomplish themselves and all activities hinge around



Left to right: Mrs. Dana Farber; Carl Sykes, Eastern Rock Products, Inc., Oriskany Falls, N. Y.; Mrs. Carl Sykes; Dana Farber, Farber White Limestone Co., Franklin, N. J.; and Mrs. Edna Farber

that policy. Objectives are to make and keep inventories of the nation's soil and water resources and to classify the soils, planning for wise use of the soil and water by developing plans for the farmers and to provide on the

site technical help.

Mr. Jones gave credit to the industry for the part it has played in the overall program of improving soil fertility. The Extension Service plans to expand its activities in demonstration farming and to put into effect some new ideas, now that more funds have been made available for its use. Recently developed plant tissue tests are to supplant guess work and less accurate observations that have been used to determine soil deficiencies. Efficient use of lime and fertilizers is considered very important for farm production efficiency.

Mr. Jones briefly summarized some of the results from a survey among the states on the subject of soil testing service. Thirty-nine states of the 48 do have soil testing service available. In some states laboratory work is done under the direction of agronomists and, in some, commercial laboratories are used. Nineteen of the states charge fees ranging from 25 cents to \$1.50 per sample tested. Approximately 11/2 million soil tests were made in 1954 according to Mr. Jones' records.

Twenty-five states based their recommendations for liming on the results from soil tests, and in nine states up to 50 percent of the farmers used liming material according to results of such tests. Eight states reported difficulties from over-liming whereas the majority did not report such diffi-

Mr. Manwaring said that a better job of education of the people will be necessary in order to get the agricultural conservation program done. The public has failed to understand why farmers cannot get the job done themselves, not realizing that incentives are needed to do the job. Farmers have got to fully understand the value of liming, he said, but unfortunately the

results from liming are not easily measurable. Education other than the visual type should be the approach.

Discussion that followed concerned the decline in agricultural limestone usage, and the part that administrative restrictions, reduced farm income and mandatory soil test requirements have had in reducing the tonnage.

In answer to one question as to what may be planted as a substitute under the wheat allotment plan, it was suggested that soy beans or the planting of good grasses and clovers would be profitable for such diverted acres.

It was brought out that the reason for the low number of soil tests (1,-500,000 in 1954) was due to several factors other than inability to get such tests done. Among them are that all farmers (there are 5 million) do not lime their soils each year, many soil tests are made which are not available for tabulation because liming material is purchased outside of the program, and farmers were squeezed by lowered prices in 1954.

The mandatory soil test was defended by the agricultural officials as a requirement that will in the long run stabilize and improve the use of liming materials. It was brought out by Mr.Koch that there were instances in 1954 where tonnages increased in some states where soil tests were not mandatory, and where tonnages dropped in some states as much as 50 percent where soil tests were required. Red tape, lack of soil testing facilities to get the job done in time, etc., were responsible to a great extent.

In answer to this criticism against compulsory tests, the reply was that it is the policy of A.C.P. to use soil tests as a guide to how much assistance should be allowed when such testing is available. If facilities for testing are not available, it is permissible as far as U.S.D.A. is concerned to use the next best indicator showing the liming requirements. That the public should not be asked to share the cost of liming unless there be logical use of the material, is the position



Left to right: Samuel Omasta, assistant executive secretary, N.A.L.I.; Harry E. Battin, Jr., Callanan Road Improvement Co., South Bethlehem, N. Y.; Leonard Fry, Incoming vice-president of Institute, Fry Coal & Stane Co., Mercersburg, Penn.; and Robt. M. Koch, executive secretary

taken. When soil testing facilities are unavailable, it is up to officials at the state level to decide on the alternative.

It was agreed that pH tests as such do not tell the accurate story of soil liming needs, due to differences in soil textures and other factors.

Evidently, much of the difficulties confronting the industry stem from restrictive and arbitrary administration of the program at the grass roots level, according to some of the comments made. Whereas the authorities in Washington provide certain flexibilities in administration of the program to meet conditions, those in authority down the line are not following through. Policies are different in comparing some states for no logical reason with the result that many farms that need liming the most are not getting any, and so on.

# **Percentage Depletion**

The Revenue Act of 1951 and the Internal Revenue Code of 1954 were discussed by association counsel John T. Sapienza. Provisions of the 1951 revenue act were reviewed in some detail. They provided 5 percent depletion for ordinary crushed stone, 10 percent for calcium and magnesium carbonates, 10 percent for dolomite and 15 percent for chemical and metallurgical grade limestone. The end use test was invoked and that provision was protested but nevertheless included by the treasury department. What was meant by ordinary treatment processes for the purpose of determining gross income was also a subject of protest.

The treasury department has tried to reduce the processes to be considered as "ordinary treatment" including the omission of blending, calcination, pulverization, etc. Several companies are testing the validity of the

end use test and there will be cases contested involving interpretation of ordinary treatment processes. Producers have three years during which the 1951 act may be restested.

The Internal Revenue Code of 1954 has less problems, and the most important provision is that agricultural limestone is entitled positively to 15 percent percentage depletion. All fimestone is in the 15 percent bracket unless used for rip rap, road construction aggregate and the like. The metallurgical and chemical grade terminology has been dropped, but the end use test applies. Limestone sold for road purposes but which is sold in bona fide bidding competitively with rock asphalt is entitled to 15 percent depletion. The question as to the meaning of "bidding" and "bona fide" will be complicating factors.

The validity of end use tests will be up to the courts. Changes involving ordinary treatment processes have been made but they do not affect limestone. No new light on what constitutes ordinary treatment processes has been provided in the 1954 code.

A new percentage depletion provision relates to aggregation of mineral interests. Each taxpayer may elect to aggregate separate mineral interests, whether located in the same tract of land or in noncontiguous tracts providing these interests constitute part or all of one operating unit. An operating unit likely would be comprised of several tracts operated in connection with one processing plant in an area that is reasonable in extent.

A producer with separate mineral interests has the right to elect, in his first return under the 1954 code, which of those interests he will aggregate. As an example, if a company is on a calendar year basis and has five separate deposits operated as a unit,

they can all be treated as separate properties for percentage depletion purposes or the company may elect to aggregate three and treat the remaining two as separate interests. There cannot be more than one aggregation in each operating unit.

A statement has to be attached to the first return under the 1954 code stating that the election is made and attaching a map of the property and information to clarify the aggregation.

Mr. Sapienza pointed out that it is not necessarily so that the election to aggregate properties will always work out advantageously. The producer must determine the method which is better taxwise over the long run. Once the election to aggregate is made, that practice must be continued unless special permission can be obtained later to change. He concluded by saying that anything a producer does in connection with his business must be accompanied by tax planning.

### Operations

In a departure from previous meetings, the operating session was turned over entirely to informal discussion of complaints against industry members, zoning and other restrictive legislation that affects the industry. The panel was under the chairmanship of Robert M. Patton, Columbus, Ohio, and included E. C. Farrar, American Cynamid Co., Jules E. Jenkins, Vibration Measurement Engineers, D. H. Weber, The King Powder Co., Inc., and P. K. Alvord, E. I. du Pont Nemours Co.

Cases were cited where zoning law changes have not only seriously restricted operations but have actually threatened the existence of producers.

Much of the discussion concerned alleged damages resulting from quarry blasting. Mr. Jenkins led off this discussion by reading a paper which he presented before a recent meeting of the Seismological Society of America covering blasting complaints.

It touched upon litigation and the lack of scientific understanding that continues to influence courts in such cases. Outmoded laws dating back many years are still referred to and many injustices accrue to plaintiff and defendant alike because of lack of knowledge as to frequency — amplitude characteristics of vibrations which are the only true measure of potential damage from blasting.

Mr. Jenkins pointed to laws that permit other mining interests to exceed ground displacements which could never be approached in quarries without damage claims. On the other hand he mentioned the extensive studies of blasting in the State of New Jersey which have resulted in regulations

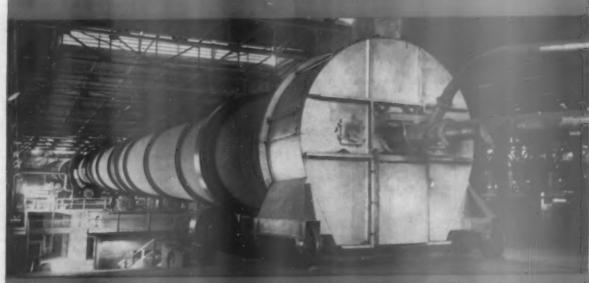
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Left to right: W. H. Carroll, H. T. Campbell Sons' Corp., Towson, Md.; F. Edward George, Thomasville Lime & Stone Co., Thomasville, Penn.; and W. F. Childs III, H. T. Campbell Sons' Corp., Towson, Md.

based upon the frequency-amplitude relation which is the sound approach. Thus, courts in that state have something to rely upon other than the unqualified ideas of the general public.

According to Mr. Jenkins' experience, all trial cases are characterized by a sameness of complaint that reduces down to a monotonous recitation of public misunderstanding. As to the attitude of insurance companies, he is of the opinion that their thinking generally runs to economics. They consider each case in terms of costs instead of scientific merit, which often leads to expedient out-of-court settlements which in turn often sets off a deluge of additional claims.

Mr. Farrar pointed out that the industry had better regulate its operations before it be regulated by others. Producers must live with their neighbors, he warned, and they must therefore come forward with constructive plans and generally build better public relations. He read the highlights of the Rules and Regulations Governing Quarry Blasting and Related Operations as exacted by the State of New Jersey. This is considered one of the best laws yet written on the subject. An unusual feature is that the blaster must be licensed by the Bureau of Engineering and Safety. Some quarries engage outside licensed blasters and such competent experts are available from explosives manufacturers.

Discussion brought out several cases where residents have accused quarry operators of damaging their water wells and their homes. Mr. Jenkins said that water wells move, under vibration, up or down as a unit. He told how drought affects foundations of buildings due to settlement and he reminded that settlement and resulting cracking can occur in homes as old as 50 years.

Mr. Alvord explained the use of falling pins in areas where damage from vibration is claimed. These simple devices, available from explosives manufacturers, serve a useful purpose in control even though such observations will not in themselves hold up in court. He told how the New York

State Crushed Stone Association has set up a legislative and ordinance committee to watch for and report on all legislation ordinances affecting quarries. A system is being set up for testing blasts at member quarries. He urged that records be kept of all quarry blasts.

# Senator Carlson's Talk

Senator Frank Carlson, Republican (Kansas), speaking before a luncheon meeting, warned against the danger of cutting down on important farm programs because of farm surpluses and production controls. Farm surpluses were viewed as temporary by the Senator who pointed to the tremendous growth in our population and to the fact that there are many hungry people elsewhere today.

He anticipates a population of 190 million people in ten years and 220 million in 1975. With this in mind, he said: "We must be ever aware of our duty to preserve the Nation's soils for future generations in a sound and adequate manner even during this period of temporary surpluses." The surpluses of farm commodities, he said, could turn into shortages within a few years.

Population increases mean that we will have to make five acres produce as much as six acres produce today, he pointed out, which will require larger investments in liming materials, fertilizers, better seeds and machinery combined with improved farming practices generally.

He stated that the surplus problem of today should be considered in the light of the following points:

"1. We are faced with a tremendous growth in demand resulting from an unprecedented increase in population.

2. We can hope and expect a continually rising standard of living for all these people.

3. With modern technology and research at work for us, there is almost no limit to the possible new uses and hence new demands for agricultural products which may be discovered.

4. Even though the export market for agricultural commodities has declined in recent years, there are still millions of underfed, underclothed peoples in the world who are anxious and willing to buy our products if they can find or be helped to find ways to pay for them."

Senator Carlson said further that the development of new farm crops, lower agricultural costs and utilization of wastes are additional ways to increase demand for our farm products. He considered the building of our soils in the same category as defense.

Congressman Jamie L. Whitten, speaking at the annual banquet com-



Left to right: Arnold Mulzer, Mulzer Bros., Tell City, Ind.; Chas Coburn, Waukesha Lime & Stone Co., Waukesha, Wis.; John H. Riddle, president of N.A.L.I., Riddle Quarries, Inc., Salina, Kan.; Russell W. Hunt, Southwest Lime Co., Noosho, Mo.; Paul Frank, Paul Frank, Inc., North Vernon, Ind.; and C. A. Broecker, Newton County Stone Co., Inc., Kentland, Ind.

mented, in part, on the subject of soil conservation as follows:

"I welcome this opportunity to speak to your organization and to so many of my colleagues. Many times in the past I have welcomed your active assistance in fights in the Congress for conservation of national resources. I understand that your business interests give you a special interest in the conservation of the nation's soil. Knowledge of the problems which you gain in your own business gives you a knowledge of land needs, and may I say, gives you an obligation to make available to the Committees of the Congress and to the public what you have learned. Not only do you have the right to speak but an obligation in my opinion.

"You know there are many things involved in this complex subject of American agriculture and its place in

the nation.

"We left agriculture out for many years when industry had advantages written into law and when industrial labor was protected by law. Largely as a result, 80 percent of our timber is gone; 40 percent of our fertile land is gone. Farm life had so few returns from the farm share of the national income dollar that farm homes had few conveniences others had. Work hours were longer. It followed that nearly all who could left the farm. Farm population went down steadily from 84 percent to only 13 percent.

"Remember the only source of real wealth is the land. Your income and the future of our nation as well is tied

to the farm income.

'If we leave to our children and children's children a fertile land, with timber restored, our soil erosion stopped and our streams harnessed, with our natural resources intact, they will make it fine. On the other hand, we could leave them all the money in the world but leave them a worn out land and they will have nothing on which to build. Remember the cost of producing food and fiber on the farm is going to be paid - either by those who use the products of the soil or by the land from which it comes. Forty percent of our land has paid that price in the past. Today with an ever-increasing population, we don't have the land to spare. There will likely be no Marshall Plan or Public Law 480 if our country should ever be worn out as are most of the old countries we aid today."

# **Buys Cement Company**

IDEAL CEMENT Co., Denver, Colo., has purchased Spokane Portland Cement Co. The purchase includes a plant at Irvin, Wash., and quarries at Marble and Boyds, Wash.

# Regional Associations Provide Wide Range of Services

A conference of executives of state and area associations in the sand and gravel and ready-mixed concrete industries was held in Miami, Fla., January 10, starting with a luncheon. This meeting, which has become a feature of the national association annual conventions, was presided over by Harold G. Feraud, secretary of the Southern California Rock Products Association and the Southern California Ready Mixed Concrete Association.

Mr. Feraud pointed to the need for a suggested set of by-laws and constitution for regional associations, the provisions of which would serve as a guide to help in organizing new state and regional associations. He also told about the safety survey which his associations had made, and the monthly Safety Sentinel which is issued to members. This publication contains a lost-time injury frequency chart, tabulations of accidents of various companies identified by code numbers, and descriptions of actual accident occur-

rences and causes.

Paul R. Smith, executive secretary, Empire State Sand, Gravel and Ready Mix Association, discussed the problem of membership interest. Mr. Smith said that his association is only 31/2 years old but counts 104 members, representing 90 percent of the recognized producers outside of New York City. There are 40 associate members. He described the organization set-up of his association whereby the board of directors has 10 members, each of which represents a district. The board membership rotates with terms of three years, and a director cannot succeed himself. A past-president remains on the board for five years. The executive secretary makes personal calls on all producers at least once a year. The association has two or three state meetings a year in addition to regional meetings to deal with local problems. All members receive reports of association and board of director meetings. Services to members include the setting up of clearing centers for information on specific problems, labor relations, and legislation followup. Dues for sand and gravel members are \$75 for 100,000 tons annually; \$150 for 100,000 to 200,000 tons, and \$250 for members with production exceeding 200,000 tons. For readymixed concrete producers, the membership dues are as follows: \$75 for a company producing 25,000 cu. yd. or less; \$150 for members producing 25,000 to 50,000 cu. yd., and \$250

for members producing over 50,000 cu. yd. The dues for associate members are \$50,

Claude L. Clarke, secretary of the Ohio Sand and Gravel Association and Ohio Ready Mixed Concrete Association, told about effective measures of procedure in legislative matters. He said that each legislative situation has to be dealt with separately, and that he works closely with state, county, city and township officials, to see that public monies are expended properly. The associations cooperate with the Ohio Chamber of Commerce in legislative programs. Mr. Clarke pointed out that small producers can help very effectively in making political contacts. If legislation is to be introduced care should be exercised in seeing that the right man introduces the bill. When members are contacted on legislation, the letters are sent out so that they are received at week ends.

Mr. Feraud pointed out that Southern California producers operate nearly 2000 trucks. He told about the work of his association on the California Vehicle Code. Mr. Feraud introduced E. R. Booker, executive secretary of the Rock, Sand and Gravel Association of Northern California. Mr. Booker said his association holds area meetings once a month and more frequently in some cases. There are no associate members. The association has been "sold" to its membership on the basis that it saves them money. A separate association corporation has been set up to obtain the advantages of dividends on insurance. Mr. Booker went into considerable detail covering union negotiations. For sand and gravel, there is a single contract with five different unions. The ready-mixed concrete problem is somewhat different as agreements are more regional in character. The president and secretary sign for members of the association. The association officers work with a committee of producers in all labor negotiations, but there is only one spokesman for the committee. These committees are representative of both small and large producers.

H. J. Stockard, Jr., executive secretary, North Carolina Ready-Mixed Concrete Association, told about the efforts of his association in the encouragement of the production of quality products. The North Carolina association has promoted an Annual Concrete Quality Conference with outstanding authorities on concrete presenting papers and laboratory dem-



An Owen bucket takes the first bite for National Engineering & Contracting Company on the 55th Street intersection of Cleveland, Ohio's multi-million dollar freeway. One of their many Owen buckets breaks ground for the Horwitz Co. of Cleveland, Ohio at the opening ceremonies of Ohio's 241 mile, 326 million dollar turnpike ar Peninsula, Ohio.



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onstrations. Another program which has been started is the annual readymixed concrete "workshop" which is to be conducted in cooperation with the North Carolina Highway Department. Members of the association must meet the highway department standards, and an approved list of producers has been set up. Producers send batch men and foreman to the "workshop." It is a two-day meeting for the "conference" and "workshop." Mr. Stockard said that there are 64 North Carolina ready-mixed concrete producers on the highway department's approved list. The highway department has a full-time plant inspector. If a company on the approved list is to be taken off, a 10-day grace period is provided to correct objectionable practices.

In the discussion which followed, the secretary of the Michigan association said that they have set up a fleet maintenance course. Nineteen attended the full course. In southern California, a Transportation Committee was set up to settle public relations

R. E. Hutchins, secretary of the Mid-West Ready Mixed Concrete Association, was not present but his paper on the function of state and area associations in the improvement of specifications was read. Mr. Hutchins pointed out a number of specific examples where the ready-mixed concrete producer, working with the designer and writer of specifications and the contractor had been in position to save money and help produce a better structure. He referred to some of the impractical specifications for cold weather concreting, mixing of concrete, and delays.

In California, on veterans' housing construction projects, a minimum of 5-sack concrete has been set up to eliminate chiseling on contracts. A considerable discussion developed on cement tests. One suggestion was that the state set up a uniform test for cements through an agency such as the state highway department. Lack of uniformity in cements has been a source of trouble in many states.

# **Adds Cement Silos**

THE FEDERAL PORTLAND CEMENT Co., INc., is adding six cement storage silos at its Buffalo, N. Y., plant, at a cost of over \$250,000. The silos are expected to increase present storage capacity by about 157,000 bbl.

# **Buys Crushed Stone Plant**

ORVAL MAHLMAN, owner and operator of Mahlman Transfer and Delivery Service in Mitchell, Mo., has purchased the G. C. Ryan crushed stone company at Warrensburg, Mo.  Wet cyclones operating under hydrostatic head clean water supply at Bausman plant of Pennsylvanja Glass Sand Co. near Newport, N. J.



General view of Bausman glass sand plant near Newport, N. J.

# Recover Fine Sand from Waste Water

FINE SILICA is removed from waste water at the Bausman plant of Pennsylvania Glass Sand Corp. near Newport, N. J., by a battery of six 6in. rubber-lined DorrClone classifiers. No pump is required as the "wet cyclones" operate under a pressure of 10 to 11 p.s.i. supplied by hydrostatic head. This pressure differential is the result of the installation of the cyclones at ground level, roughly 30 ft. below a de-watering Dorr classifier. Overflow from this classifier discharges directly to the DorrClone units through an 8-in. header. Recovery of 99.7 percent of the silica, discarded with plant tailings, prevents accumulation of solids in a water supply pond.

Before installation of the wet cy-

clones about 600 g.p.m. of overflow from the 12 ft. wide QSF Dorr classifier was sent to the pond. Although this flow contains but 0.3 to 0.4 percent solids, the continuous build-up of 12 to 15 tons of silica per day in the pond posed the problem of periodic dredging.

The six DorrClone classifiers, each handling 100 g.p.m., are mounted on a steel structure side by side and are manifolded to the feed header. Flow is controlled to each unit by rubber pinch valves. Overflows discharge to a common 8-in. header carrying the cleaned water to the supply pond. Underflow is collected in a sump and is pumped to disposal. Operating costs are low because no power is required

due to the available hydrostatic head, and low pressure operation minimizes wear in the cyclones.

Feed, containing approximately 25 percent plus 100 mesh material, is slime-free. Combined overflows carry only an average of 15 grams of solids per minute, reducing the solids in the pond to 50 lb. per day. Underflow averages 2 g.p.m. from each Dorr-Clone unit at 15 to 18 percent solids.

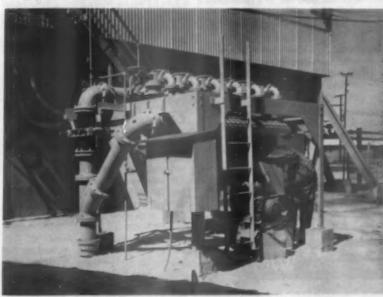
# Safety Book

THE NATIONAL SAFETY COUNCIL has announced that the 1954 edition of its statistical yearbook, "Accident Facts," is now available for distribu-tion. The book contains facts and figures on all types of accidents --industrial, traffic, home, farm and school. Twenty pages of the book are devoted exclusively to occupational accidents and provide the factual background necessary to give direction to an industrial safety program. Included is a detailed list of accident rates by major industry groups, as well as charts showing the accident trend during the past 25 years. Price of the book is \$0.75 per single copy, with a lower rate for quantities. Inquiries should be sent to the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

# **Pavement Yardage**

AWARDS OF CONCRETE PAVEMENT for the month of December and during the 12 months of 1954 were listed by the Portland Cement Association as follows:

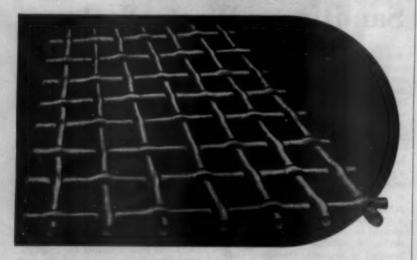
with Williams said &		
	Square Y	ards Awarded
	December,	Twelve Months
	1954	of 1954
Roads	.3,638,755	18,026,658
Streets and Alleys	2,853,888	29,270,298
Airports	,2,697,930	18,054,086
Totals	.8,690,930	85,831,038



Six 6-in. hydraulic classifiers which remove fine silica from plant water. Feed header from classifiers comes down building on the left, and overflow header is shown along front and left side of structure. Operator is checking overflow pump

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  - HIGH PRODUCTION
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# **Ohio Breakfast Meeting**

MEMBERS of the Ohio Ready Mixed Concrete Association held a breakfast meeting at the Columbus Hotel, Miami, Fla., on Tuesday, January 11. with Carl F. Shoaff, president of the association presiding. This meeting, which has become a regular feature held in connection with the national association meetings, brought out an excellent attendance. It was announced that the association now has 117 memhers.

Fred Coppock of the American Aggregates Corporation was asked to tell the meeting something about his unusual project to be built near Miami. Fla., an aquarium which will be the largest in the country.

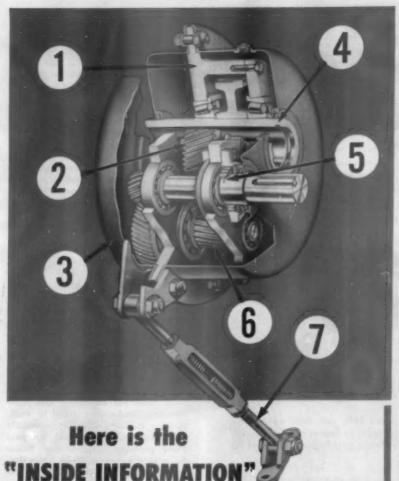
Chas. Detrich presented the report on the survey of axle-mile cost when applied to ready-mixed concrete. Although the tax was supposed to bring in \$19,000,000 annually, only \$11,-500,000 had been collected. Several proposals have been made to increase the state's income by increasing the gas tax, the amount of axle-mile tax. and also to include two-axle truck units. The cost to ready-mixed concrete producers was estimated at 2.9 cents per cubic yard.

R. P. Mumford outlined the program of the Ohio Ready Mixed Concrete Short Course to be held February 7 and 8 at the Fort Haves Hotel. Columbus, Ohio. The registration fee will be \$10 per person. Important speakers will be Clayton Davis, Stanton Walker, and Dr. Allan Bates of PCA who will be the banquet speaker. There will be a laboratory and research session at Ohio State University, and Jas. A. Nicholson will preside at a panel discussion.

Hubert T. Richardson, Richardson Scale Co., defined "automation" and described various types of weighing devices. He illustrated the different types of weighing systems with slides. pointing out their application and how they function.

# **Construction Materials Book**

A NEW BOOK, entitled "Materials of Construction," gives essential data on the sources, manufacture and fabrication of principal building materials. The volume contains chapters on timber, covering chemical seasoning, wood products, and timber connectors, and deals with types of cement, modern testing methods, and the influence of alkalies on durability. Details are given on mix design methods, and on the properties of fresh and hardened concrete. The 887-page book by M. O. Withey and G. W. Washa, is priced at \$9.00. It is available from the publisher, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y.



# on FALK STEEL Shaft Mounted Drives

Take a careful look inside the Falk all-steel Shaft Mounted Drive, and you will know why this newest member of the famous Falk family is ideal for applications where direct mounting on the driven shaft is desirable. It is the only drive in its field with all these superior "In-built" factors:-

- 1 All-steel Freme, with more than double the rigidity of iron, supports all rotating elements.
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- 3 Pressed Steel Housings, whose sole function is to keep oil in, dirt out; easily removed for gear inspection without dismounting unit.
- 4 Through Hollow Shaft with counter bore provides for easiest installation or removal from driven machine shaft extensions.
- & Backstop can be furnished with the unit or added later for positive prevention of reverse rotation.
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- 7 Tie Red and turnbuckle serve as anchor and facilitate V-belt or chain adjustment.

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The Patterson Foundry and Machine Company, (Canada) Limited

MONTREAL

# Rocky's Notes

(Continued from page 45)

important. Whether it can be accomplished without a balanced budget is anybody's guess. It is difficult to see how wages and the costs of production can be kept stable unless wage increases are kept in line with a reduced labor factor in the overall costs of production. Whether a federal government can be had with sufficient intestinal stamina to keep this principle in practice is an unknown factor. There does not appear to be any effort thus far to make labor leaders see the light, but maybe the time is not ripe for that. In any event we are still passing through a period of extraordinary interest in experimental political econ-

# **Labor Relations**

(Continued from page 47)

Thompson Materials and Construction Co., Inc. He worked indiscriminately and interchangeably at the request of the defendants in repairing and maintaining their equipment. However, the record of hours worked by the shop and office employes, including Osie M. Williams, and all other records were kept separate as to each firm's operations, separate payroll deductions were made for each firm and separate pay checks were issued by each. If Mr. Williams' cumulative weekly hours exceeded 40 he was not paid extra overtime compensation unless he worked in excess of 40 hours during the week for a single firm. It was the practice when Mr. Williams had worked 40 hours for one firm, and conditions would permit, to shift him to work for another firm at straighttime pay and not resume work for the original firm until the next week.

"It is the contention of the defendants that each firm is a separate entity maintaining separate businesses with separate ownership interests, and that the employment of Osie M. Williams was separate by each firm in each and every instance. The plaintiff contends that the defendants jointly employed Osie M. Williams and that he should be paid overtime compensation under Section 7 of the Act on the basis of the cumulative total of his weekly hours.

# Conclusions of Law

"I. The Court has jurisdiction of the parties and the subject matter of this action.

"II. Osie M. Williams was employed by the defendants and was engaged in the production of goods for interstate commerce within the meaning of the Act.

"III. Where an employe works for two or more employers during the

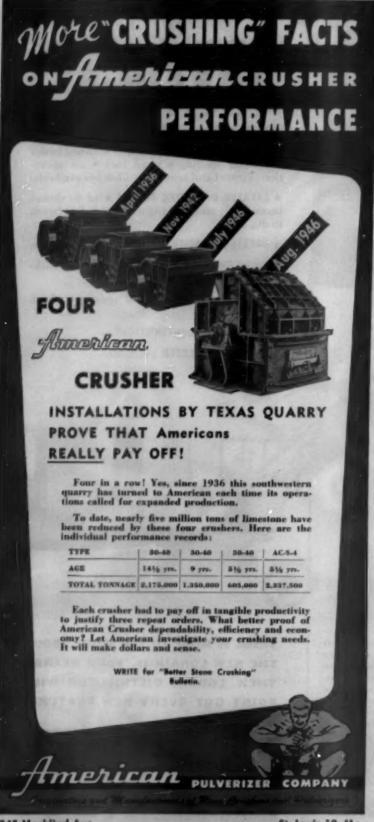
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same workweek pursuant to an arrangement between such employers for the interchange of the employe, or if one company controls, is controlled by, or is under common control with, directly or indirectly, the other company, the entire employment must be considered as a whole for the purposes of the Act and the employers are jointly employers and each is jointly liable for the full amount for each joint employer.

"IV. The defendants are joint employers of Osie M. Williams. The plaintiff is entitled to judgment in the amount of \$580.37, plus \$56.68 interest accrued since the claim arose,

and costs.'

# **Rotary Kiln Efficiency**

(Continued from page 85)

and exhaust loss 3750 B.t.u. or 2250 B.t.u. per pound of coal less than at point "1."

However, this is an impossible condition. To begin with there must be a terminal temperature differential if there is to be heat transfer. Second, the heat saved is converted into lime, and this additional lime brings in more stone which cools the exhaust gases, further enhancing lime production.

The 2250 B.t.u. primary saving would be multiplied in increments by about 1.4 for a total saving of 3140 B.t.u. and as all of this would go to lime, dividing by 1315 results in 2.39 lb. of additional lime or combined 2.39 + 2.78 = 5.17 lime-to-fuel ratio.

The new point would be located at "4." To the left the temperature of gases leaving the calcining zone is indicated at 1690 deg. F., and terminal temperature differential to the right at 190 deg. F. This temperature difference is ample to obtain good heat transfer under suitable conditions such as would be created in a segmented kiln. The exhaust gas temperature diagonally above is shown to be 900 deg. F. The curve passing across the chart, giving the basic waste gas temperature, crosses the 5.17 ratio at 710 deg. F. which with the 190 deg. differential makes for the above actual waste gas temperature.

It will be observed that the saving accomplished is not any minor figure, such as 2250 B.t.u. direct, or amplified by the 1.4 factor, 3140 B.t.u. which is 22.5 percent of the heat in the coal. The saving rather than the 2.78 lime-fuel ratio is 5.17 - 1 or 86 percent. It means a 200-ton kiln producing 372 tons, which appears quite exaggerated, until we consider that the 72 tons of coal burned, on available heat basis, without waste at 9.6 - 1 ratio should produce 690 tons of lime. As a matter of further proof, a mixed feed kiln for this amount of heat in coke would

22-ton "Eucs" with quarry bodies haul stone for 22-ton Texts with quarry boards not state for ideal Cement Co. of Colorado. Top speed of this Madel 36 TD, with full payload, is 32.5 m.p.h. Spring mounted drive axle and Allison Torquatic Drive are important factors in stepping up production and ofits at this operation.

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produce 570 tons of lime. That the rotary kiln does not produce as efficiently is that while it is a very good heat generator, it is a far better heat waster than a heat absorber.

The magnitude of the loss due to calcining zone terminal temperature differential, which may also be called the overlap was never and it still is not generally realized. It is the loss which in combination with the radiation loss negatives the rotary kiln.

Essentially all the striving is for conservation of heat of calcination and improvements in the calcining zone; it is prevention of escape of calcining heat at one end, and the return of sensible heat of lime which essentially is also heat of calcination at the other. Then there is prevention of calcining heat loss by external kiln radiation, which involves improvement of heat transfer to increase the zone heat absorption capacity, to reduce its size, external exposure and reduce its necessary internal temperature.

**Operating Problems** 

ditions. Even the commonly experienced delay when specimens are picked up on Friday and held over the weekend without protection result in loss of the order of 500 p.s.i.

The report has been issued in book-

let form as N.S.G.A. Circular No. 59 and N.R.M.C.A. Publication No. 53.

#### **Protest Cement Variation**

A sidelight of the convention of N.R.M.C.A., was the reading of a letter addressed to director of engineering Stanton Walker by John Young, executive accretary of the Central Arizona Concrete Association on a subject of great concern to the industry in its attempts to meet strength specifications. The letter read, in part:

"It is the purpose of this communication to present to the National Ready Mixed Concrete Association, the losses experienced by concrete producers because of variations in composition of Type I, portland cement and solicit their support in securing for this type of cement a more realistic specification. The need for over-designing concrete twenty-five percent because the cement is low in strength places an unjust burden on concrete producers and a specification for the cement that reduces this over-design would assist the whole concrete industry. Assistance of the National Ready Mixed Concrete Association in securing adoption by the American Society of Testing Materials of a more restrictive specification for Type I, portland cement is requested.

"Compound composition of Type I

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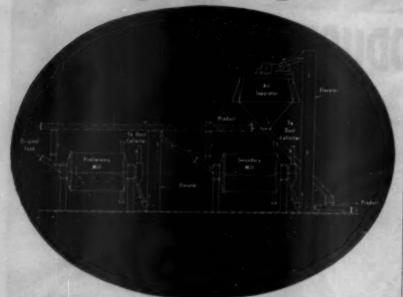
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ROCK PRODUCTS, March, 1955

## lower grinding costs



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Grinding costs can be cut when you use CF&I Grinding Balls. Forged of tough, special analysis steel, CF&I Grinding Balls have the ideal balance between toughness and hardness that means efficient, economical operation. You

will get greater tonnages before replacement is necessary, whether in coarse grinding or in the finer mesh sizes. CF&I Grinding Balls are available in diameters from ¼ inch to 5 inches.

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Con Cooperates \* Continue \* Wickline

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CANADIAN REPRESENTATIVES AT: Colgory \* Edmonton \* Montreal \* Toronto \* Vancouver \* Winnipag

#### **Operating Problems**

(Continued from page 108)

cement, delivered in this area, runs from 5 percent to 8 percent in tricalcium aluminate and 38 percent to 50
percent in tricalcium silicate. This difference, according to the Gonnerman equation (Chemistry of Portland Cement, by Bogne, page 498), will result in variation of 20 percent in the 28-day strength of concrete. Tests made for the Central Arizona Concrete Association have shown variation of 25 percent.

"The following additions to ASTM Standard C 150 for Type I portland cement are proposed:

1. Tricalcium aluminate shall be not less than 7 percent

2. Tricalcium silicate shall be not less than 45 percent

The presentation of this recommendation to the National Ready Mixed Concrete Association at their meeting at Miami, Florida, would be greatly appreciated."

This subject of variations in a given brand of cement from shipment to shipment and their effects on the strength and consistency of concrete, and the necessity to over-design because of such variations in order safely to meet strength specifications, was also presented before the board of directors of N.R.M.C.A. by M. Eugene Sundt, Albuquerque Gravel Products, Albuquerque, N. Mex. Mr. Sundt presented a mass of data to point up seriousness of the problem.

His recommendations were to develop a test for portland cement which may be made quickly and economically so that a user may know in advance what to expect from a given shipment, and to develop factual data to effect a revision in the specifications for portland cement to assure all users that shipments from a given fill will be uniform in quality as to water demand and strength producing properties.

#### Concrete Research Engineer Views Ready-Mixed Concrete

Some very practical suggestions were offered by Fred F. Bartel in his paper, "An Operator Trained as a Concrete Research Engineer Views Ready-Mixed Concrete." Mr. Bartel is a civil engineer with Tews Lime & Cement Co., Milwaukee, Wis. Maintenance of quality control through all operations was emphasized by Mr. Bartel. The three specification situations confronting ready-mixed concrete producers were listed as: (1) where the purchaser assumes responsibility for the design; (2) when the ready-mixed concrete producer assumes responsi-

(Continued on page 116)

2479

# Here's what we mean by LOW-COST MAINTENANCE

Solids Handling
PUMPS

## Troubles are few and far between

One user of Allis-Chalmers solids handling pumps said, "We've been operating them for 8 months without loss of capacity."... another said, "We ran it for 13 months before we replaced the first part."

## Inspection is an easy routine

Take-down and re-assembly require less than half an hour. Merely disconnect the drive . . . loosen the nuts on casing bolts . . . and lift out the bolt assemblies. Then, swing out the rotating element. There's no need to disturb the suction or discharge piping.

## Parts replacement is fast, economical

Wear is limited because there are only five wearing parts. Many parts are interchangeable among several sizes of Allis-Chalmers solids handling pumps so you won't have to carry big spare parts stocks. What's more, because parts replacement is infrequent . . . because it's so fast and simple . . . down-time production interruptions are held to a minimum.

In addition to sound design, Allis-Chalmers solids handling pumps feature special hard alloy *Ni-Hard* and extra thickness of metal in critical spots. Then, too, each A-C pump is application engineered to meet the specific conditions under which it will be used.









Remember, Allis-Chalmers can furnish the complete pumping unit—pump, motor, control and drive. Next time you need a solids handling pump, call your A-C representative or write—Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 52B6381.

A-4603



**ALLIS-CHALMERS** 

## What's the news in big gravel plants?

- Is it the overhead eccentric jaw crusher?
   Universal introduced it in 1906.
- Is it the 4' x 12' 21/2 deck gyrating screen?

  The Senior "R" has had it since 1952 and with a fall 48 working area.
- Is it the 30 inch conveyors?

  The 880 Senior "R" has featured them single
- Is it designed to meet highway weight light long Universal's 880 Senior "R" has met this requirem

## The Real news is what's new in the Universal 880 SENIOR "R"

- New 30 x 26 Roll Crusher. Now, the greatest secondary crushing assertly over offered in a plant of its weight class.
- New Head Drive Front Dolivery
  Conveyor
  Gives you a smoother, faster delivery of
  the Senior "R" 's tremendous output.
- New Dual Clutch Control On Front Delivery Conveyor Now, the rapid discharge can be controlled from either plant or ground providing real convenience, economy and control at all times.
- New "Outside of Plant" Jaw
  Adjustment
  Now, you can change the 1036 primary
  jaw discharge opening quickly and take
  full advantage of any changes in pit conditions. This feature reduces downtime
- New V-Belt Drives
   Modern, simplified—engineered for more efficient and trouble-free operation.

and increases your overall production.

 New Extended Operator's Platform Gives you greater convenience in operating the plant.



The Universal 880 Senior "R" continues to make high-production and big profit news. Its easy portability and flexibility make it the ideal plant to handle most gravel crushing operations. Now, with these new features, the Senior "R" will give you even bigger production with easier, more convenient operation. Compare before you buy and you'll buy the Universal 880 Senior "R". Write for bulletin today!



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Information on

#### TO HELP YOU MEET TODAY'S PROBLEMS AND TO MAKE PLANS FOR TOMORROW

- ADJUSTABLE SPEED DRIVE Esten Menufacturing Co., Dynamatic Div., has published Bulletin SF-1, describing Dynaspede liquid cooled, eddy-current couplings. Construction details, capacities, characteristic torque curves, dimensions, efficiencies and advantages are included.
- 2 AIR REDUCTION Air Reduction Co., Inc., has released a backlet entitled "Facts About Air Reduction," which describes and illustrates the products and services of the varicus divisions of the company.
- 3 AUTOCLAVE SYSTEMS Wm. Bree Beller and Manufacturing Ca. has released a four-page brachure on the Bree "Single Responsibility" autoclave system for high pressure curing of concrete block. Included are diagrams, photos, and data on the system which includes autoclave vessels, packaged boiler, racks, fans, etc.
- BIN LEVEL CONTROL—Stephens-Adamcon Manufacturing Co. has announced Bulletin 11-0, describing and illustrating the "Tellevel" bin level control. Line drawings, diagrams, and typical installations are given.
- BLAST HOLE DRILL—Bucyrus-Eric Co. has prepared a 16-page bulletin, No. 50-R-2, describing and illustrating the 50-R blast hole drill. A list of general specifications is also given.
- 6 CAST FLOOR-ROOF SLASS—The Flexicore Co., Inc., has published the 1958 catalog for the Flexicore floor and roof system. Properties and uses of monolithically cast sinks, hasic structural and mechanical details, and erection procedures are outlined.
- 7 CAST IRON—The International Nickel Co., Inc., has brought out a 28-page besic reference bulletin, No. A-69, on nickel alloy cast iros. Pitty illustrations show industrial usage in verious sizes and shapes, and 27 tables, charts and photomicrographs illustrate how angineering properties of cast iron can be controlled to meet service requirements.
- Broundry and Machine Co. has released two folders describing its sepanded range of alloys and applications for its centrifugal certings. Metallurgical specifications are given for ferrous and non-ferrous certings.
- CHEMICALS—The Dew Chemical Co. has announced a revised catalog, "Products of The Dow Chemical Company," giving an alphabetical listing of Dow chemicals, prepared in brief form.
- IO COMPRESSOR—Le Rei Division, Westinghouse Air Brake Co., has issued a bulletin describing and illustrating the 85 c.f.m. Airmatter compressor. A cross-section view, specifications, tool capacities, weights and dimensions are included.
- CONCRETE FLANTS—C. S. Johnson Co. has published a 44-page text-book type catalog on concrete pisants for central-mix, transit-mix and concrete operations. Over 90 photos, diagrams, drawings and charts cover various phases in the planning, modernizing and expanding of plants. A series of pian views illustrate typical plant sites with relation to transportation facilities and ground-storage areas.
- CONCRETE CONSTRUCTION—The Fiesimre Co., Inc., has released a brochure cotified, "Livishie Bleements," describing and illustrating the use of present omerate fleer slabe in basement construction. The split-system of heating is close explained and illustrated.
- 13 CONVEYOR Stepheno-Adamson Memofacturing Co. has brought out Bulletin 1554, illustrating the Sacs sectional bag conveyor. Specifications and line drawings are given.

- 14 CONVEYOR RELTS Quelter Rubber Corp. has issued a color chart showing engineering data for sizedard conveyor belt constructions, and pointing out characteristics of several ply and material combinations.
- 15
  CRANE-EXCAVATOR—Becyrus-Erio Co.
  has brought out a 12-page bulletin, No. 15-BTC-1, describing the 15-B Transit Crans. Job
  application photos, closeups of mechanical features, specifications, working ranges, and descriptions of major advantages are included.
- CRANE HOOK BLOCK Upses-Waiten
  Co. has released a bulletin describing and litustrating the Max-Lift crane hook block for use
  on mobile cranes. Specifications and dimensions
  are included.
- 17 CYCLONES—Heyl & Patterson, Inc. has brought out a 20-page booklet, describing the II & P cyclenes. Included are available size, general uses, advantages, typical applications, and a description of the firm's research and development facilities, and other products.
- DIESEL FUEL INJECTION Commiss Engine Co., Inc., has announced a bulletin describing and illustrating the "PT" fuel injection and pump system. Cut-away illustrations, a schemetic fuel flow diagram, and edvantages are given.
- DRAG SCRAPERS—Sauerman Bros., Inc. has announced Bulletin 160, actitled "Long Arms For Your Tractor," describing and illustrating its drag scrapers and slackline cableway excavators. Line drawings, maximum spans, line speeds and capacities are given.
- 20 DUCTILE IROSS—The International Nichal Co., Inc., has announced Bulletin DI-12, describing Ductile Iron as a replacement of alloy cootings and forgings for gears and other components. Photomicrographs and tables are given.
- DUST FILTER The Ducon Co. has announced Bulletin F-2053, describing the Type UFV Bin Vent filter for applications on a hopper, bin or enclosure where a slight vacuum must be maintained to prevent dust or product ecops. Mounting dimensions, capacities, and diagrams are given.

- 22 ELECTRIC TRUCKS The Raymond Corp. has brought out a 24-page catalog, illustrating and describing its line of electric trucks. Specifications, diagrams, action photographs, and construction and mechanical details are included.
- PROTH FLOTATION American Cyanamid Co., Mineral Dressing Dept., has published "Mineral Dressing Lotes" No. 21, on froth flotation, giving a study of flotation from its early bistory to present-day chemistry and applications. An estensive bibliography is included.
- QAS DISPERSION—Air Poliution Control
  Association has issued its ensual masting paper,
  No. 84-10, estitled "Role of Chimney Design
  in Dispersion of Wasto Geos." Diagrams and
  tables illustrate patterns of gas flow, dispersion,
  oc.
- 25 HEAVY-DUTY EXCAVATOR—Ecohring Co. has brought out an eight-page catalog, illustrating end describing construction features, work capacity and application of the Model 405, 20-ton, heavy-duty excavator. Machine part photographs, line drawings, and feature descriptions are included.
- PYDRAULIC STEERING SYSTEMS —
  Vickers Inc. has issued Catalog M-5106, describing its line of components for hydraulic
  power steering systems. These include the B-23
  series power steering boosters, was type power
  steering pumpa, combination volume control
  and overload rolled valvo, and an oil reservoir.
  Photographs, circuit diagrams, performance
  curves and line drawings showing typical applications are included.
- 27 INDUSTRIAL RUBBER PRODUCTS —
  Condoor Rubber Corp., Div. of H. E. Parlar
  Co., Inc., hos relocated a 58-page come-bound
  general cutaing on its industrial rubber preducts. Sections are included on betting, here,
  packing and molded rubber products. Each is
  illustrated in a cut-away section and described.
  Performance date, specifications, sizes, working
  pressures, weights, etc. are included.

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#### Information on



#### NEW LITERATURE

### about your business

USE COUPON BELOW

- 28 INDUSTRIAL HOSE Thermoid Co. has brought out an 8½- x 11-in, chart for wall-mounting, a hose check list to act as a reminder that hose can be damaged by abuse. The hose check list points out four common abuses, and lists 11 hosic rules to follow.
- 29 LEVEL INDICATOR—Convoir has released a breedure describing and illustrating the "Bin-Vuo" level indicator in four models. Line drawings further illustrate inscenting orientedates.
- 30 LIFT TRUCK OPERATION—Hyster Co. has released Form 1214, a 24-page booklet asticled "How to Operate a Lift Truck." Cartesoning is utilised to point out data on operation, resintenesses, safety and back materials handling. Drawings for setting up an obstacle course are also included.
- 31 LIFT TRUCKS—Hyster Co. has issued a field report, No. 52, on the headling of precent concrete for bridges with the use of the RT-150 and YT-40 lift trucks. Also included are on-the-job photographs.
- 32 LIGHTWEIGHT CONSTRUCTION—Sometime Co. has brought out Bookiet G-66, outlining uses, installation procedures and specifications of vermiculite products in lightweight construction. Besic aggregate requirements are reviewed and compared with vermiculite aggregate properties. Also included in a summary of fire tests and ratings for vermiculite concrete structures, and an outline of planter fireproclanged edvantages.
- 33
  LUBRICATION—The Tenas Co. hee published Vol. XLI, No. 1 of "Lubrication," featuring an article on "Lubricating Oil Analysis," Various laboratory mothods for lubricating oils are given, and photographs of various types of equipment used in analyses are also included.
- 34 MAGNETIC PULLEYS—The Homer Manufacturing Co., Inc., has nencounced Bulletin PY-360, describing and illustrating "Hercules" permanent magnetic pulley applications and feetures. Diagrams, performance data, specifications and a size selection guide are included.

- 35 MASONRY PROTECTION The Seddon Co. has prepared a specification guide for water-proofing, repairs and color conting of concrete and messary surfaces. Descriptions and illustrations point out proper application methods, and an above and below grade well cross section chart is included.
- MATERIAL HANDLING Ceterpiller Tractor Co. has issued Form D490, antitled "Lowering Industrial Costs the Caterpillar Way." On-the-jeb respects are given for track-type tractors, shovels, wheel tractors and motor graders, and action photographs illustrate various equipment operating in chemical plants, mines, fertilizer plants, etc.
- POWER TRANSMISSION CONVEYING

   Link-Beit Co. has announced its Standard
  Products Catalog, No. 950, a 340-page guide
  to its line of standard power transmission and
  conveying equipment. Included are tables of
  pre-selected assemblies, capacity charts and dimansions, components for acrew conveyors, beit
  conveyors, bucket elevators, etc., as well as
  Flaxmount escillating conveyors.
- POWER UNITS International Harvester Co. has published a catalog, describing and lilustrating 18 heavy-duty power units with a range of from 16.5 to 200 hp. Specifications for application of the units to new installations or as replacements for existing power are given.
- PRE-MIXED MORTAR-GROUT The Master Builders Co. has released an eight-page (flustrated folder on Embeco pre-mixed grout, and a four-page illustrated folder on Embeco pre-mixed mortar. The advantages are described, and application directions are given.
- PUMPS—Bingham Pump Co. has issued a 16-pags brochure, entitled "This is Blingham Fump," describing facilities and methods used by the company. Also available is a 32-page brochure "A Technical Treaties on the Advancement of Centrifugal Pump Design," giving as engineering description of the "Bingham Double Volute" design.

- 41 QUARRY MACHINES Caterpillar Tracter Co. has issued Form E492, entitled "Modern Machines for Mines, Pits and Quarries," containing on-the-job photographs and job descriptions of track-type tractors, showles, motor graders, scrapers, side dump trailers and engines on various mining operations.
- 42 RINGS—Edgewater Steel Co. has issued a 12-page builetin, describing relied steel rings for bearing races, garen, pipe flanges, rotary kiln tires, parts for disctric motors, etc. A simplified presentation of the manufacturing process is given, and illustrations are included of representative shapes and various production processes.
- 43
  RUBBER-TIRED DOZER-HAULER—LoTournseu-Westinghouse Co. has issued two performance report reprint books, No. 19 and No.
  26, featuring data on the use of rubber-tired
  dosing and hauling equipment on pit, quarry
  and stockpile operations. The "Tournatractor"
  and 7-cu. yd. capacity D Toursspoil units are
  described in operation.
- SAPETY EQUIPMENT General Scientific Equipment Co. has released the 1955 Issue of "Everything in Safety," a 1.20-page, illustrated catalog, describing and illustrating personal protective equipment and safety devices. Respiratory equipment, eye protection, hats, gloves, drum pumps, etc. are included.
- 45 BERVICE PUMPS—Peerlant Pump Div., Food Machinery and Chamical Carps, has announced a 16-page bulletin, No. B-505, describing and illustrating the application of vertical industrial service pumps for liquid transfer from short settings in both industrial and process services.
- 80IL TESTING—Solitest, Inc. has released the 1955 estalog esetaining descriptions and illustrations of over 1250 items of apparatus for engineering tests of solls, concrete, asphalt and construction materials. Suggested laboratory layouts are included.
- 47 SPUR-GEAR HOISTS Colling Hoist Cohas brought out Bulletin YC and YCT, describing its line of spur-gear hoises, Pictures, cut-away drawings and specifications are given. Models for specialized applications are shown, in addition to standard single and multiplechain units.
- 48 SURFACINGS—Rust-Oleum Corp. has released Form 254, the 1955 general catalog, featuring 98 color chips of various rust-preventive curfacing predicts. Inservacions are given for surface preparation and application of primers, finishes, thinning oils, floor and masoury continus, etc.
- TORQUE CONVERTERS Clark Equipment Co., Transmission Division, has issued an eight-page catalog describing its line of Torcon torque converters. Included are illustrations of various models, ettachments for specific adaptations, and descriptions of converter construction with cutaway drawings.
- 50 TRACTOR Caterpillar Tractor Co, has brought out Form DE478, describing and illustrating the Cat DW20 tractor. Specifications and production figures are given, and the 225-hp. segine is pictured and detailed.
- 51 WIRE ROPE ASSEMBLIES Macwhyte Co. has published Catalog 5201, entitled "Macwhyte Seds-Lock Wire Rope Assemblies." Descriptions, illustrations, specifications, and ordering instructions are included.

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## Perfect Starting Point for Modern Mechanized Handling of Concrete Products...

## THE WHITE 3000



SAVE HANDLING TIME... CUT DELIVERY COSTS with the truck that can be tailored to your exact operating conditions for substantial time and cost savings —The White 3000.

Here is the perfect starting point for efficient materials handling of concrete products of all kinds because of its functional design, ideal weight distribution, superb maneuverability, rugged performance and power.

If you are contemplating a change in your materials handling program... from quarry to building site... see your White Representative... first!

SPICKELMIER CO., of Indianapelis, Ind., a great name in building materials for 48 years, new has four White 3000's with Superlite Unloaders in service. Handles 900 Haydite building blocks which can be unloaded in 20 minutes. It is a Model 302264 White with 250A Mustang Engine, 24 ft. bedy, power steering and many other top-auality features.



Modern way to handle a load of 6,000 bricks with real time savings, from plant to off-the-road site.

WHITE 3000 tractor trailer loaded with Rapidex Haydite sectional slabs, a Spickelmier roof and floor system. Maximum payload with minimum handling and remarkable maneuverability with the White 30001



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## IF YOU HAVE A MATERIALS HANDLING PROBLEM—

Or a new operation with specialized transportation needs, see your While Representative. White transportation engineers will be glad to help you achieve maximum transportation efficiency in your own operations.

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To producers of sand and gravel, rare earths, and other mineral products

## Combine digging and

### made-to-order processing plant



This Yube dradge (4000-ten displacement) digs 112 ft. belew water with 18 cu. ft. buckets; her emple deck space for processing mechinery.

Dredging costs under 5¢ per ton for gravel are not uncommon with large YUBA bucket ladder dredges. They also have dug cemented gravel, boulders, and into bedrock without costly drilling and blasting. They float in their own ponds, excavate without lowering surrounding water levels. Bucket sizes range from 2½ to 18 cu. ft. . . . digging depths from 10 ft. or less to 125 ft, below water.

#### **Complete Plant Afloat**

Your YUBA dredge can be built to screen out rocks; to break up and wash away surplus clay; to size through single or multiple screens; to remove mineral products by jigs, cones or magnetic separators. In short, you can completely process and grade your product as you dig, all aboard a YUBA dredge.

#### **Choice of Handling Methods**

Your dredge can be designed to stockpile ashore, load into trucks or shore conveyor; load into barges; or pump ashore through pipes.



Consult YUBA NOW. We can build you a new dredge... redesign, move and rebuild a used dredge... to fit your particular needs. Wire, write or call us—no obligation of course.

67

#### VUBA MANUFACTURING CO.

#### **Operating Problems**

(Continued from page 110)

bility for the design; and (3) when the responsibility is shared between producer and purchaser. The first two are covered by A.S.T.M. specifications, but the third case is not covered. In addition to the three major types of specifications, a considerable volume of concrete is sold for small jobs where no specifications are involved as, for example, sidewalks and footings. Mr. Bartel pointed out that regardless of the form the specification or order took, it was the responsibility of the producer to supply concrete that would serve best the use to which the concrete was to be placed.

Mr. Bartel cited several examples of impractical specifications which he called "double or triple-barrelled." In his area, 5-bag concrete is regularly used to produce 3000 p.s.i. concrete when the maximum size of aggregate is 11/2 in. and the slump does not exceed 4 in. The exceptional provision to which he referred, however, was the maximum water-cement ratio calling for 6 gal. per bag. As this would provide only 30 gal. of water per cu. yd., including free water in the aggregates, the slump would be zero. At least 33 gal. are necessary for a slump of 3 to 4 in. To comply with the specifications not less than 51/2 bags of cement would have to be used. Mr. Bartel said that the producer should in this case quote on a 51/2-bag mix.

Turning to the question of quality controls, he said that accuracy in weighing is essential and all scales should be checked periodically. Mr. Bartel warned about errors in air content with air-entrained concrete. A mistake in using air-entraining cement in place of standard cement would result in a reduction of cement content of about ½ to ½ bag per cu. yd. because of the increased yield of concrete. He also referred briefly to a new automatic system of weighing cement, aggregates, and water using a punch-card system.

Mr. Bartel expressed the view that control of slump really began with the aggregates in the quarry or pit and to some extent in the cement mill. Grading and processing of sand and coarse aggregates should be handled to produce a uniformly graded material. No coarse aggregate graded coarser than 1 in. should be handled as a single size, but should be separated into two or more sizes and recombined when batching materials. Cement is also important in that any changes in stiffening or setting properties within a single brand, such as may be encountered when using hot cement, will affect

(Continued on page 118)



## SYMONS® CONE CRUSHERS produce specification aggregate for huge new Tunnel & Power Project

Three hundred feet below the fascinating Canadian City of Niagara Falls, one of the greatest tunnel jobs of all time was recently completed-part of the huge Sir Adam Beck Niagara Power Project built by the Hydro-Electric Power Commission of Ontario, to harness additional power from the Niagara River. Waterways for this modern project include twin concrete-lined tunnels, each 51/2 miles long, with 45-ft. finished diameters, which will handle 15 million gallons of water per minute. Playing a major role in the essential production of specification aggregate for this record-breaking project were two 41/4-ft. Standard and one 3-ft. Symons Short Head Cone Crushers . . . another interesting example of the way Symons Cone Crushers profitably serve the construction industry the world over. Nordberg Mfg. Co., Milwaukee, Wisconsin.

Tunnel section, with concrete lining completed. This lining averages three feet in thickness.



SYMONS Cone Crushers . . . the machines that revolutionized crushing practice . . are built in Steandard, Short Need, and Intermediate types, with crushing heads from 22 inches to 7 feet in diameter—in capacities from 6 to 900 tons per hour.





GRINDING

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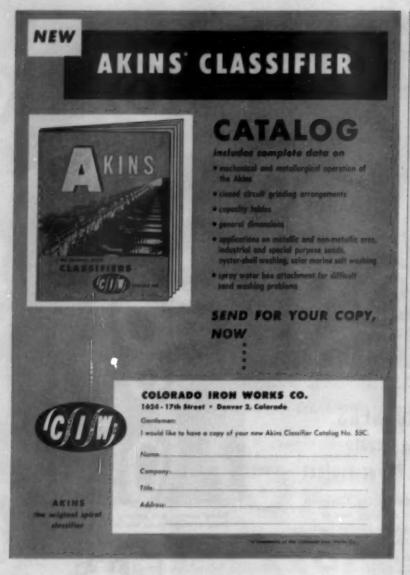
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C155



SYMONS VIBRATING BAI GRIZZLIES and SCREENS





## ROCK PRODUCTS

Recognized Authority

OF THE

Non-Metallic Minerals Industry slump. Water requirements may vary with different brands.

Stressing the importance of moisture content of sand, Mr. Bartel said that it was best to stockpile all sand before using to allow sufficient drainage. He urged accurate determination of moisture and cautioned against visual observations or tests for slump. He said that in central-mixed concrete operations, a useful tool for controlling slump may be found in the relationship between power required to mix a given size of batch and the consistency of the concrete. A watt-meter or ammeter, if voltages are uniform. may be calibrated for this purpose. He suggested that someday a torquemeter may be perfected for use on a truck mixer for similar purposes.

Reference was made by Mr. Bartel to the A.S.T.M. specifications for mixing time controlled by the number of revolutions of the mixer drum. He urged that producers follow these specifications, particularly when jobs are close to the plant. He said that many criticisms of transit-mixed concrete as having great variations in strength and slump stem from inadequate mixing under these conditions. On the other hand, long delays result in a loss in slump.

Another point which Mr. Bartel emphasized was the troubles that might be encountered from wash water remaining in the drum of mixer or agitator; also water getting into the drum from washing off trucks, charging hoppers, chutes, etc., between loads.

The problem of controlling quantity of air in concrete with air-entraining concrete was also covered by Mr. Bartel. He referred to studies by Walker and Bloem which showed that the air content of concrete increases as the quantity of sand in the mix in the No. 30 to No. 50 size increases. He pointed out that less air is usually entrained in rich mixtures than lean, and wet concrete will ordinarily entrain more air than dry mixes. The temperature of the concrete is important in that more air is entrained the lower the temperature of concrete. Long mixing also tends to reduce the quantity of air entrained. Mr. Bartel expressed the opinion that it is easier to control the air content if the air-entraining admixture is added to the concrete materials at the mixer.

Mr. Bartel said that while the readymixed concrete producer has a no immediate responsibility in the handling of the concrete by the contractor, he does have a business interest in seeing that the concrete is used in a way that will promote future use through satisfaction with the results obtained. Abuses should be corrected by making

(Continued on page 120)

## DESIGNED COMPLETELY... COMPLETELY BUILT...



### BY VULCAN

Illustrated above is a VULCAN Rotary Kiln 8' x 160' long, used for the calcining of material needed in the manufacture of abrasives. This all-welded kiln, together with a partially submerged and water-sprayed 5' x 40' Cooler under the kiln, was designed and built completely at VULCAN's plant in Wilkes-Barre, Pa.

Since its installation in 1944, this unit has never had any downtime, and is still in perfect condition.

This is another instance of a manufacturing concern contacting VULCAN, and asking them to design and build a complete installation. This installation has proved just as successful in performance as have all other VULCAN complete installations through the years.

If you are planning to build, contact VULCAN of Wilkes-Barre. VULCAN's manufacturing facilities are of the latest, their Engineering Department is fully staffed to offer you answers to any of your problems. Their 106 years of continuous business means experience. You can benefit by this experience in constructive suggestions and preliminary drawings—without obligation (as far as possible). Write today for Bulletin A-422 on Rotary Kilns, Coolers, Dryers, Retorts, and other dependable equipment. If you have a problem, VULCAN will gladly assist you.

Any information on items listed below will be sent to you immediately:

Rotary Kilns, Coolers and Dryers Rotary Retorts, Calciners, Etc. Improved Vertical Lime Kilns Automatic Quick-Lime Hydrators Briquetting Equipment Open-Hearth Steel Castings

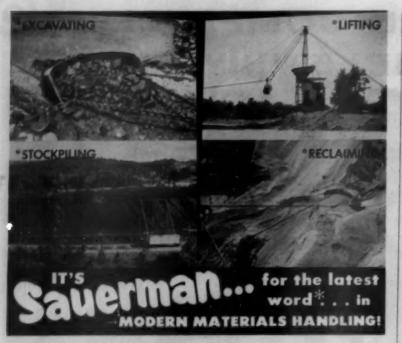
Heavy Duty Electric Hoists Self-Contained Electric Hoists Cast-Steel Sheaves and Gears Diesel Locomotives Electric Locomotives and Larrys Steel Plate Fabrications Hydraulic Presses

#### **VULCAN IRON WORKS**

NEW YORK OFFICE

WILKES-BARRE, PA., U.S.A. ESTABLISHED 1849

CABLE ADDRESS



cavating from a river bottom, brings in a load of stone with very few fines for a western sand and gravel company.

Lower left; 8-cu. yd. ecraper machine is stockpiling 300 tons per hour, over an arc of 450 feet radius in a 225,000-sq. ft. storage area. Tail tower is remately con-trolled from elevated cab above happer.

Upper right: 2-cu. yd. Slackline Cableway apanning an average of 450 feet, lift and conveys from an underwater deposit to a high hopper at the rate of 75 tph

Lower right: 2-cu. yd. Crescent, working between a fixed point head and movable fell tower, reclaims phosphate from all points about the periphery of a roughly somi-circular storage area.

Saverman systems are providing efficient, economical materials handling at installations throughout the world -

DRAG SCRAPER: for pit or hill excavation, reclamation or general handling of materials, wet or dry. Serves as rapid, long range conveyor. Sizes 1/3 to 15 cu. yds.

SLACKLINE CABLEWAY: for deep digging-especially underwater-and conveying to a high delivery point. Reaches down a hundred feet or more .. spans up to 1000 ft... sizes 1/3 to 31/2 cu. yds.

DRAG SCRAPER STOCKPILER: for profitable handling of sand and gravel, ores and chemicals. Low on first cost, plus economical one-man operation,

Call on Saverman engineers for the method best suited to your exceveting, lifting or materials handling requirements. Write for more information and catalogs.

BROS. INC.

630 S. 28th Ave. BELLWOOD, ILL.

### ROCK PRODUCTS

IS READ BY THOSE WHO BUY YOUR **PRODUCTS** 

pertinent and diplomatic suggestions to the users.

A word of caution was given by Mr. Bartel on the use of admixtures in seeing that they are measured out with great care and that frequent tests for air content be made to control the quantity of air entrained in the mix. Admixtures should be measured out only through mechanical dispensing devices which are calibrated frequently. On the question of the use of accelerators, such as calcium chloride, for use in concrete in cold weather or when high-early-strength is desired, he said that not more than 2 percent by weight of cement should be used. It should be dispensed as a solution by means of a calibrated timer controlled pump and charged into the mixer along with the mixing water.

Mr. Bartel closed with a reference to the troubles encountered in sampling and testing. He pointed out that it is highly essential that test cylinders of concrete be properly made and handled.

#### **NEW INCORPORATIONS**

CHARLESTON BRICK Co., Charleston, S. C., was recently incorporated with \$10,000 capital stock. Robert N. S. Whitelaw is president.

CLINTON GRAVEL PRODUCTS CORP., Brooklyn, N. Y., has been incorporated by Selma Riezenman.

POMEROY CEMENT BLOCK Co., Gallipolis, Ohio, has been incorporated with 240 shares of no-par common stock. The incorporators are Ernest P. Duerr, John R. Duerr and Leslie F. Fultz, with Mr. Fultz also serving as registered agent.

GLOBE BULK CEMENT, Great Bend, Kan., has been incorporated with \$16,-000. The incorporators are Carl F. Hickey, Albert Hert and Dick Evans.

MISSOURI MARBLE QUARRIES Co., Ste. Genevieve, Mo., has been incorporated for operation of a stone quarry. The articles of incorporation authorize the issuance of 100,000 shares of stock, \$1 each. Initial capital is listed at \$6000. The incorporators are T. Inkley, S. L. Inkley and T. Inkley, Jr.

MERAMEC CONCRETE, INC., St. Louis, Mo., has been incorporated to deal in sand, gravel, concrete and lime. Five-hundred shares of stock, \$100 par value each, have been authorized, with starting capital listed at \$1000. R. J. Vonder Haar, V. H. Vonder Haar, and C. C. Gilpin are the incorporators.

B & M CONCRETE Co., Phoenix, Ariz., was recently incorporated by J. G. Briggs and Ernest W. Mills.

IN THE CRUSHED STONE INDUSTRY, TORRINGTON Bearings are used in many applications including crushers, screens, shovels, cranes, pulverizers, grinding mills and rotary kilns.



#### **TORRINGTON Spherical Roller Bearings**

are manufactured with accurate geometrical conformity between races and rollers for ultimate capacity and performance.

Because conformity factors are uniformly high, rollers can operate with a minimum of friction and carry greater loads for a longer time.

There are other good reasons why TORRINGTON SPHERICAL ROLLER BEAR-INGS can guarantee superior performance. Races and rollers are precision ground to a high surface finish from the finest quality electric furnace steel available.

An integral center flange on the inner raceway gives positive radial and thrust stability against continuous high-speed,

high-load conditions. Fully machined, cast-bronze, land-riding cages-one for each path of rollers-allow thorough lubrication, reduce wear and lengthen bearing life.

Specify dependable, rugged TORRINGTON SPHERICAL ROLLER BEARINGS in your equipment. They're available with either straight or tapered bore for shaft or adapter mounting.

THE TORRINGTON COMPANY South Bend 21, Ind. . Torrington, Conn. District Offices and Distributors in Principal Cities of United States and Canada

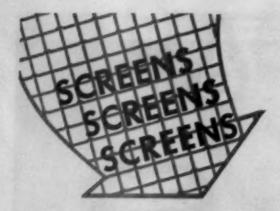


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New SIMPLICITY Screen Plant

SIMPLICITY Woven Wire Screens in a wide range of wire gauges and openings are available for shipment from huge stocks in our warehouses within a few hours after receipt of your order. Edges formed and banded to fit any type of vibrator. Newly expanded production facilities permit fast action on special orders.

#### FOR COMPLETE DETAILS

Write today for Bulletin No. 66 describing the complete line of SIMPLICITY Woven Wire Screens. SIMPLICITY Screens are expertly woven and do a fast, accurate job of sizing and separating aggregates of all types. Good abrasion resistant qualities insure long life and dependable service with minimum downtime for repairs or replacement. Phone us for immediate shipment of your rush orders.



Sales Representatives in all Parts of U.S.A.

FOR CANADA: SIMPLICITY
MATERIALS HANDLING LIMITED
GUELPH, ONTARIO



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#### Slurries...handled at lower cost

Bulletin

The new WILFLEY MODEL & Centrifugal Sand Pump embodies important mechanical improvements aspecially edapted to the handling of cement alurry and results in stepped-up production end substantial power savings. Individual engineeries, witte for details.

A. R. WELFLEY
A SONS, Inc.
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New York Office: 1775 Brandway, H.Y.C.



ABREAST WITH INDUSTRY TRENDS THROUGH ROCK PRODUCTS

KEEP

#### **MANUFACTURERS** NEWS

A. P. Green Fire Brick Co., Chicago, Ill., has announced the appointment of J. W. Swatek as general sales manager. He has been with the sompany since 1983 and was formerly regional sales manager. M. D. McClain, who has been sales manager of the Woodbridge division in New Jerzey, has been named assistant vice-



TO THE PARTY OF TH

J. W. Swatek

M. D. McClain

president. He will be succeeded by W. K. Stevens. H. L. Seynon, W. W. Cockrill, O. H. Read, and C. H. Coats have been appointed assistant general sales managers.

Dur-O-Wal division, Cedar Rapids Block Co., Cedar Rapids, Iowa, has opened a manufacturing plant in Toledo, Ohio, to serve users in Ohio, Michigan, Indiana, West Virginia and western Pennsylvania. Carl H. Zimmerman has been appointed sales representative in charge of the new plant.

Marion Power Shovel Co., Marion, Ohio, has available two 16 mm color-sound movies, "The Marion 191-M" and "Marion and You," featuring material handling exasyators in action.

Baughman Mfg. Co., Jerseyville, Ill., has announced the appointment of Leonard H. Lee as sales engineer in the eastern territory, which includes all states east of the Mississippi River except Wisconsin and Illinois.

United States Rubber Co., New York, N. Y., has announced the appointment of G. Allen Lovell as assistant general manager of the mechanical goods division. He succeeds Herbert G. Kieswetter who has been named executive assistant to the general manager of the international division.

Caterpillar Tractor Co., Peoria, Ill., has formed a wholly-owned subaidiary in Sao Paulo, Brazil, named Caterpillar Brasil S. A., with Robert J. Loakill as managing director. He was formerly sales development manager in Peoria.

Western-Knapp Engineering Co., division of Western Machinery Co., has moved its office in Jeffersonville, Ind., to 431 S. Dearbern St., Chicago, Ill.

Jeseph T. Ryerson & Son, Inc., Chicago, Ill., announces that C. D. D'Amico has been appointed manager of sales at the Los Angeles plant to succeed C. H. Hallett who has been given a special assignment in Chicago. F. X. Kinsie, sales representative for the stainless steel department, succeeds Mr. D'Amico as manager of the department.

The Eimee Corp., Salt Lake City, Utah, has announced completion of its new research and development center in Palatine, Ill., devoted primarily to research and development work in the field of liquid-solids separation. It is equipped to test samples and present pilot plant determinations to Industries with filtration problems.

Worthington Corp., Harrison, N. J., announces that Hobart C. Ramsey, chief executive officer, has been samed chairman of the board to succeed Howard Bruce who has been elected chairman of the executive committee. Edwin J. Schwanhausser has been elected president to succeed Mr. Ramsey, and Walther

## designed with dozing in mind



In its weight and power class, only the Allis-Chalmers HD-5 crawler gives you a tractor that is new in design and built with bulldozing in mind — with a main frame that is designed for front-mounted equipment, built-in provision for hydraulic pump, reduced frontend overhang, and better over-all balance. That is why the HD-5 does more work in its power range — at a lower cost and with less down time.

BUILT FOR TODAY'S JOBS. The pace-setting design of the HD-5 gives you important margins of safety in power, strength, and balance for longer, more productive tractor life. Each part is designed and built with a new standard of performance to meet today's increased use of tractor-mounted equipment.

BALANCED WEIGHT. The Allis-Chalmers all-steel, welded box A-type main frame eliminates dead weight and permits the weight to be placed where it will add to working strength and to tractor balance. For instance, the strong, heavy truck frames keep tracks in line constantly, contribute to better weight distribution and a lower center of gravity — with improved bull-dozing and longer life.

ENGINE-MOUNTED DOZER. The box A-type main frame also permits the use of an engine-mounted dozer, with blade located close to the tracks for improved overall balance, greater strength, and more accurate blading. This type of construction provides direct down pressure on the blade, eliminates heavy, bulky mountings that clog with material and debris, gives better accessibility for inspection and servicing.

GREATER GROUND CLEARANCE. Double reduction final drives provide ample ground clearance to take advantage of the HD-5's low center of gravity and full traction in mud, soft footing, or rough going.

Plus These Additional Money-Saving Features: 1,000-hour lubrication intervals for truck wheels, idlers, and support rollers saves time, cuts labor cost . . . unit construction for easy servicing, because box A-type main frame makes major assemblies readily accessible for inspection, adjustment, and servicing . . . operator

comfort second to none, with convenient controls, full vision, easy steering, and simplified shifting.

Write for detailed literature or contact your Allis-Chalmers dealer. He will be glad to demonstrate the advantages of the HD-5.

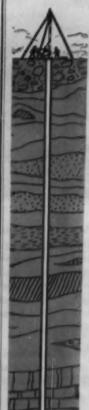
ALLIS-CHALMERS

GREATER FOOTAGE at LOWER COST

with Sprague & Henwood's

## ORIENTED Diamond Bits





THAT'S OUR STORY in a nut shell and we're proving it every day—ast only in our own world-wide contract core drilling operations, but also through the money-saving results being achieved by hundreds of other satisfied users.

After extensive comparative tests had demonstrated to our satisfaction that drill diamonds cut much faster and last much longer when "oriented" in the matrix with their hardest edge or "vector" toward the work, we decided that random setting was both inefficient and wasteful. Since then we have standardized on oriented diamond bits and have produced THOUSANDS — in a wide variety of types and sizes; with both cast- and powdered-metal matrices.

Only selected diamonds of suitable crystaline structure can be used and only specially trained and equipped setters of more than usual aptitude can be relied upon to orient diamonds correctly in the mold, but we are now fully organized for efficient production of ORIENTED DIAMOND BITS, at so additional cost to purchasers.

In terms of footage cast, we believe these to be the most economical diamond bits ever produced, and invite inquiries on that basis.

Bulletin 320 illustrates and describes all types and gives complete working data. Write for a free copy and tell us about your diamond drilling requirements. Our experienced executives welcome apportunities to make money-saving suggestions without charge ar obligation.

### SPRAGUE & HENWOOD, Inc. SCRANTON 2, PENNA.

New York-Phila.-Pittsburg-Grand Junction, Col.-Buchans, Newfoundland EXPORT REPRESENTATIVE: PHILIPS EXPORT CO., 100 E. 43nd ST., NEW YORK 17, N. Y.

If you want the SHARPEST SPLITS . . . the BULGE in the MIDDLE removed . . . RECOVERY of WASTED FINES . . .

If one or all of these is your problem, the Charles E. Wood Company's Consulting Service is available to you, whether the job is small or large. Let us show you how to salve your gradation problems economically, as other plants are doing it all ever the country. Write for our bullstin teday!



CHARLES E. WOOD COMPANY

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WITH
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PRODUCTS

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H. Feldmann, formerly vice-president in charge of sales, has been named executive vice-president. Clarence E. Searle has retired as vice-thairman of the board but continues as a director. Thomas J. Kehane, assistant vice-president and general sales manager, succeeds Mr. Feldmann as vice-president in charge of sales. Charles A. Butcher was named vice-president for planning.

The Frank G. Hough Co., Libertyville, Ili., has announced the appointment of G. A. Gilbertson as excutive vice-president and general manager. He was formerly vice-president in charge of sales, advertising and service. R. L. Beyerstedt, formerly vice-president and





G. A. Gilbertson

R. L. Beyorstedt

chief engineer, has been named executive vicepresident in charge of engineering and product development. Frank G. Hough is president of the company.

Atlas Powder Ca., Wilmington, Del., announces the retirement of Charles G. Hersh, director of the government ordnance works division, after more than 25 years of services.

Chain Belt Co., Milwaukee, Wis., announces the death on November 16 of William C. Frye, director and former president. He was 77 years old and had been associated with the company for 60 years, starting in 1805 as office boy and becoming president in 1916. He retired as president in 1923.

Raybestos-Manhattan, Inc., Passaic, N. J., has announced the retirement of Harry E. Smith, vice-president in charge of rubber products sales and member of the board of directors and executive committee, after 45 years of service.

The Heil Co., Milwaukee, Wis., has appointed the General Truck Equipment Co., Long Beach, Calif., as distributor in the southern Los Angeles county, which includes the following towns and communities: Long Beach, Signai Hill, Seal Beach, Artesia, Bellinower, Clearwater, Hyses, Compton, Gardena, Torrance, Wilmington and San Pedro.

Bailey Meter Ca., Cleveland, Ohio, has established a new district office in Dallas, Texas, with F. D. Krunemark as manager, and in Memphis, Tenn., under the management of R. E. Byers. The Dallas district covers northern Texas and northwestern Louisiana. The Memphis district includes western Tennessee, northern Biosiosippi and the state of Arkanass.

The Heil Co., Milwaukee, Wis., announces that Harlan Stoller has been appointed director of government, export and road machinery sales. Formerly export and government sales manager, Mr. Stoller has been with the company for 26 years. Paul Miller, sales manager of the former road machinery division, has been appointed sales manager of the new department.

American Brake Shoe Co., New York, N. Y., has elected Harry C. Platt as executive vice-president of the engineered castings division. He was formerly vice-president in charge of production.

Stulz-Sickles Co., Newark, M. J., announces that E. F. Hannum has been appointed district sales manager in charge of Ontario operations for all manganal welding products, with headHere's Where AMSCO®

"Wear-Sharp" Repointers

## INCREASED DIGGING

On a particularly rugged digging operation, Amsco manganese steel "Wear-Sharp" repointers increased the dipper's active service period by 8 times . . . operating an average of 32 days without repointing, as against 4 days for the type previously used.

Extend repointer or dipper tooth life on your dippers with Amsco "Wear-Sharp" repointers. When you fill their end grooves with Amsco hardfacing rod, you protect the tooth at the 6 points of maximum wear. This prevents corner blunting and equalizes wear along the entire cutting edge so that the tooth stays sharp.

Order Amsco repointers from your Amsco distributor. He carries a complete line of Amsco manganese steel dipper teeth, shapes and hardfacing materials.

Besides manganese steel, Amsco makes other alloy steels with high resistance to impact and abrasion.



#### FACTS ABOUT 3 TYPES OF AMSCO REPOINTERS



"Wear-Sharp" Repointer (patented)—
To equalize wear and maintain a sharp cutting edge, grooves on each end and on corner
faces can be filled with a tough hardfacing
deposit. It prevents the tooth from rounding
or blunting. Teeth stay sharp, helping to
maintain digging speed and to conserve power.
Available straight (shown) or with crescentshaped backs.



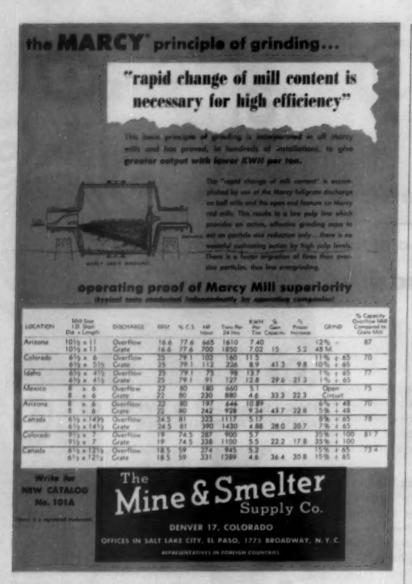
Repointer Bera—Excellent for rebuilding teeth used in heavy digging, these repointers are made of tough, wear-resistant manganese steel. They are delivered in bars of 3-foot length and cut to the width of the tooth on the job. They are also being used for rebuilding lips on dippers, clamshell buckets, ore loaders and dragline buckets.



Cost-to-Shape Repointers — Ideal for less severe digging, these manganese steel repointers are easy to weld on. An average-size tooth can be completely rebuilt in about 15 minutes, using only two electrodes. Cast with "ears" that protect the flat sides of the tooth, these repointers add strength and service life to the entire tooth.



AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, III.





#### STANDS UP TO SEVERE USE and even abuse

One word describes a Hayward—ruggedness. Yes, it's as tough, strong, sturdy as a bucket can be and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request, Writel THE HAYWARD COMPANY, 80 Church St., New York 7, N. Y.

#### HAY WARD BUCKETS

CLAM SHELL - CLECTRIC - GRANGE PER - GRAPPLES Famous for performance since 1809 ROCK
PRODUCTS
FEATURES

TIMELY

NEWS

EACH

ISSUE

quarters in Cleveland, Ohio. He will cover southern Ontario from Windsor to U.S. border at Niagara Falis and northern shore of Lake Ontario to Oshawa.

Flexible Steel Lacing Ca., Chicago, Ill., announces that Newt Crum has been appointed to represent the company exclusively in California, Arizona and Reno, Nev.

Concrete Mold & Engineering Co., Battle Creek, Mich., announces that it is in position to furnish new, used and rebuilt electric motors of various makes and sizes from fractional hp. to 200 hp.

Baldwin-Lima-Hamilton Corp., construction equipment div., Lima, Ohio, announces the appointment of R. C. Larkin Co., Chicago, Ill., and Industrial Tractor & Equipment Co., Inc., Nashville, Tenn., as distributors.

Euclid Division, General Motors Corp., Cleveland, Ohio, has appointed Euclid-Tennessee, Inc., Nashville, as distributor in middle Ten-

Clark Equipment Ca., Benton Harbor, Mich., has announced the appointment of Russell L. McKinley as field service manager of the construction machinery division. He was formerly service manager for Browning Crane & Shovel Co.

The Timken Roller Bearing Co., Canton, Ohio, announces that D. G. Gibson, formerly sesistant district manager, has been appointed district manager of the Dallas territory, succeeding the late Harry Trump, who died December 25 at the age of 63. He had been with the company since 1937.

Drave Corp., Pittsburgh, Penn., announces the death on November 27 of Lether C. Zollinger, vice-president, who retired in October, 1964.

Huber Mfg. Co., Marion, Ohio, has announced acquisition of the W. A. Riddell Corp., Bucyrus, Ohio, through an exchange of stock. Huber Corp. plans to concentrate on the manufacture of road rollers and maintainers while Riddell Corp. will continue to manufacture all graders and clay machinery.

Osgeed-General, Marion, Ohio, has announced the appointment of Den R. Williams of Portland, Ore., as division sales manager for Oregon, Washington and British Columbia.

Stearms Magnetie, Inc., Milwaukee, Wia., has announced the apprintment of R. M. Miller as vice-president in charge of sales, production and ongineering activities. Formerly manager of the transmission plant, Mr. Miller has been with the company since 1946.

Joseph T. Ryerson & Son, Inc., Chicago, Ill., has announced the appointment of Wenver E. Falberg as general manager of sales, Formerly masistant general manager of sales, he will be succeeded by John A. Houston who has been assistant sales manager of the Chicago plant.

Harbison - Walker Refractories Co., Pittsburgh, Penn., has announced the appointment of Frank Weir as assistant general sales manager. He had been Pittsburgh district sales manager since 1949.

Flexible Steel Lacing Ca., Chicago, Ill., announces that Milton B. Beach, president, and Mrs. Beach recently sailed to Europe to conclude arrangements with importers and manufacturers for the sale in the United States of REMA, a self-vulcanising rubber repair material for repairing conveyor belts and rubber covered electric cables.

The Huber-Warce Ce., Marion, Ohio, a merger of The Huber Mfg. Co., Marion, and The W. A. Riddell Corp., Bucyrus, has announced the following personnel appointments: Clark T. McConsell, chairman of the board; Don A. Howard, president; Jacque E. Jones, executive vice-president; Ralph Howard, vice-

#### The latest advancement in

## Dualaire

REVERSE-JET DUST COLLECTOR!



#### dust recovery

- Cleans without jarring or rapping!
- Maintains uniformly low pressure drop!
- Field-proven efficiency as high as 99,99%!

Backed by the same organization that pioneered commercial application of Cottrell Precipitators and Multiclone Collectors, the Dualaire Reverse-Jet Dust Collector is revolutionizing filter-type recovery systems. The Dualaire gives you vital advantages like these...

#### REVERSE-JET CLEANING ACTION

cleans the filter tube continuously in small increments—not with sudden surges as in rapping or jarring.

**CLEANING ACTION** starts automatically and stops automatically to keep pressure differential within low pre-set range.

FILTER REFEIGHNCY remains uniformly high at all times because no thick filter cake ever forms to reduce operation effectiveness. Actual field tests show efficiencies as high as 99.99% [

NO STANDBY UNITS, with their complicated switching devices, are needed. The DUALAIRE is cleaned as it filters—without interruptions or shut down periods for cleaning. The operation is continuous!

PILTER UNITE LAST LONGER because they are not subjected to intermittent jarring, rapping or vibration—all destructive to filter fabrics.

The above are only a few of the many important advantages you get in DUALAIRE DUST Collectors. This 12 page booklet

gives the full story . . . explains how reverse-jet cleaning action works — shows how the basic DUALANS until is adaptable to a wide range of operating requirements — provides facts, figures and illustrations that will change your thinking on filter-type recovery systems.

Send for your free copy of this descriptive booklet — or see your nearest Western Pracipitation representative!



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#### MECKUM'S SAND & GRAVEL JIG



REMOVES
WOOD
LIGNITE
COAL
SOFT STONE
POROUS STONE
CHERT
OCHRE
SHALE
CLAY

By stratifying the materials of different specific gravities through a mechanical process.

Another Progressively Engineered Product by Meckum Engineering, Inc.

- · A High Production Unit
- Low Initial and Operating Cost
- Construction for Easy Installation and Portability
- Premium Product to Meet Increasingly Rigid Specifications
   Ne Stockpile Disintegration or Discoloration
- Gives You: e Finished Product Washed Exceptionally Clean

For all details as to how the Mackum Gravel Jig can be incorporated in your plant, write us.

#### MECKUM

53 W. Jackson Blvd., Chicago, Illinois

Dayton Road, Ottowa, Illinois

WANTED!

#### PUMPING JOBS NOBODY ELSE WANTS!

You can buy lots of good pumps for ordinary pumping jobs, but NAGLE PUMPS are built to survive in those applications where ordinary pumps fail.

If you must pump highly abrasive mixtures, corrosive liquids, hot solutions or heavy slurries, then you will save by using NAGLE CENTRIFUGAL PUMPS. Engineered to your specific requirements—The right design, the right materials of construction. Horizontal and vertical shaft types in complete range of sizes. Send for Catalog 5206.



 Modified type "SW-O" vertical shaft pump built by Nagle for severe service in an atomic energy plant.



president; Robert E. O'Connell, treasurer; F. F. Corfman, assistant treasurer; Baird Johnson, secretary; and Kenneth Roberts, assistant secretary.

Marion Power Shovel Co., Marion, Ohio, has announced the appointment of Kenneth O. Williamson so sales manager for Marion-Osgoed-General. He was formerly sales manager of The Osgood Co.

Hysier Ca., Portland, Ore., has appointed Harvey A. Raasch as export sales manager. He was formerly assistant export manager of Le Roi Co., Milwaukse, Wis.

Berg-Warner Corp., Chicago, Ill., announces that Edward W. Clark has been elected a vice-president of the Calumet steel division in addition to his duties as weeks manager.

Lippert Bin Co., formerly of London, Ohio, manufacturers of batching and storage bins, elevators, weigh batchers and screw conveyors for bulk cement, has moved into larger quarters at 2983 Baulah Road, Columbus, Ohio.

Frushauf Trailer Co., Detroit, Mich., has appointed Robert K. Morgan as product sales manager of special bulk hauling trailers for powdered material, with headquarters at the Fort Wayne plant.

Air Reduction Sales Ca., New York, N. Y., announces that L. O. Geiger has retired as manager of the Dayton, Ohio, district and will be succeeded by C. R. Grange, assistant district manager.

Traylor, Engr. & Mfg. Ca., Allentown, Penn., has announced the appointment of George R. Habb as field and erecting engineer. For the past two years he has supervised the installation and operation of machinery in lime and cement plants in Mexico.

Clark Bres. Co., Olean, N. Y., has opened a new district sales office in Atlanta, Ga., with Richard Foster as district manager.

Hedson Pulp & Paper Corp., New York, N. Y., announces the appointment of William Mazer as president to succeed Jacob Mazer, who has been named chairman of the board. Irwin A. Zuckerman has been made vice-president in charge of consumer products division, and Raymond S. Hatch has been appointed vice-president in charge of research.

Pennsylvania Crasher Co., a wholly-owned subsidiary of Bath Iron Works Corp. since 1947, has been merged with the parent company and will be operated as the Pennsylvania crusher division of Bath Iron Works Corp.

Cummins Engine Co., Inc., Columbus, Ind., announces the appointment of M. W. Brooks as regional manager, mid-west district, central region, St. Louis, Mo., to serve Kentucky, southern Illinois, Missouri, Iowa, northern Kansas, Nebraska and South Dakota.

Whiting Corp., Harvey, Ill., has opened a new district office at Charlotte, N. C., with Fred W. Fisher as manager who will be assisted by Harvey E. Waters.

Highway Equipment Co., Inc., Cedar Rapids, Iows, has appointed Roy Gaddis, Jr., as assistant general manager. He has been associated with the firm for the past eight years.

Vickers, Inc., Detroit, Mich., has announced the appointment of Arthur H. Van Wormer as district sales manager in Cleveland, Ohio. He succeeds Paul Simonds who has retired after 13 years of service.

Sike Chemical Cerp., Pascaic, N. J., announces that Cornelius B. Barrett, who has been resident engineer on the Tappan Zee Bridge for the past three years, has joined the firm as a concrete specialist and consultant. Mr. Barrett, who has had 30 years of experionce in concrete technology and has been identified for many years with specialized types of concrete construction, will represent the company in the New York area.

## Pa.H 955-A (2½ yd.)



Model



### PaH MAGNETORQUE\* gives you 20% more output!

If you still have not experienced P&H Magnetorque this is the time to do it!

Why now? Because the growing volumes for the new highway program will place heavier burdens than ever on your production equipment. You'll want the swing speed Magnetorque supplies for maximum output,

P&H MAGNETORQUE does it for you! Faster swings with quicker starts and stops - give you cycles 20% faster than any other 21/2-yard machine. Magnetorque will deliver it now - and years from now. With Magnetorque there's no friction, no wear. Lasts the life of the shovel.

If you're looking for the best investment, remember: The low-cost shovel is the one with the high cycle. You can bank on P&H Magnetorque! Write for literature. P&H Model 955 A - 21/2 yd. P&H Model 1055 - 31/2 yd.

\*T.M. of Harnischlagar Carporation for electro-magnetic type coupling.

PH POWER CRANE & SHOVEL DIVISION

CORPORATION . MILWAUKEE 46, WISCONSIN



















## WEMCO SAND PREPARATION MACHINES an exclusive design...that earns extra profits for you

From either standpoint — profits or operating costs — you're dollars ahead with Wemco Sand Preparation Machines. These modern designed Wemco units are unmatched for their ability to produce desired tonnages of specification sands at lowest possible cost. Owners of Wemco Sand Preparation Machines consistently earn higher profits because the exclusive design of these units means greater efficiency in terms of the following important factors:

#### PRODUCTION RESULTS

Fine Fraction Control — for elimination of slime, clay and other foreign materials, with exact retention of desired quantities of fine sands.

Medium Fraction Control — with sharp segregation between coarse and fine particles for the control of wastage and the exact blending of middle size screen fractions.

Coarse Fraction Control — with thorough washing action and accurate segregation of medium and fine sizes to allow sharp blending for desired specifications.

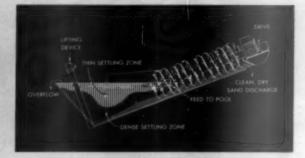
**Dewatering and Desliming** — for high capacity production of sands of all sizes, clean in content and free of excess moisture.

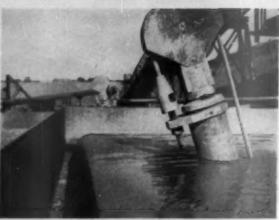
#### MECHANICAL OPERATION

Large Settling Tank — greater effective pool area and wide overflow weir for proper flow velocity and improved settling conditions.

Large Capacity Spiral — advanced pitch design for greater raking capacity at reduced speeds and more thorough mixing, washing and draining of sand product.

Lower Operating Costs — because of long-life wearing parts, less maintenance, minimum operator attendance and low power consumption.





Large pool area, controlled agitation assures proper conditions for rapid settling of desired sands.

Write Wemce today for further information and recommendations on your sand production problems. Send for free Bulletin C-1-0-2.

#### PRINCIPAL OFFICES

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## CONCRETE PRODUCTS

A SECTION OF ROCK PRODUCTS

CONCRETE UNITS . READY-MIXED CONCRETE



Looking down one aisle of exhibit hall at recent National Concrete Masonry Association convention



CONCRETE PIPE made with Duraplastic air-entraining portland cement at Montoursville, Pa., Pipe Plant of Concrete Products Company of America (Subsidiary of American-Marietta Co.).

### Manufacturers report improved concrete products lower production costs with DURAPLASTIC\* cement



WORKMAN REMOVES pollet of four units at Brikerste plant in Indiana. Owner reports better-looking units with Duraplastic.



**SECTION OF 48-Inch reinforced concrete pipe** made with Duraplastic at the Concrete Prod-ucts Company of America plant shown above.



WORKMAN LIFTS blocks from machine at concrete-products plant in Ohio. Owner says Duraplastic-made blocks are strong and uniform.

PRODUCTS MANUFACTURERS of all types of units report decreased production costs and more profit when they make concrete products with Atlas Duraplastic airentraining portland cement.

They find that Atlas Duraplastic cement reduces the number of culls and rejects...minimizes breakage in the handling of green products. Duraplastic-made mixes are "rubbery" and cohesive...hold together well and feed easily through machines.

What's more, Atlas Duraplastic combines this outstanding economy with increased sales appeal. Products are cleanly formed and highly resistant to the passage of water. Face texture is richer, especially when harsh aggregate is used.

YET DURAPLASTIC COSTS NO MORE ... Sells at the same price as regular cement. Requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

OFFICES: Albany . Birmingham . Boston . Chicago . Dayton . Kansas City Minneapolis . New York . Philadelphia . Pittsburgh . St. Louis . Waco

"Thrifty" Says: Duraplastic cuts costs and ts profits. It docrooses breakage...reduces the number of castly culls and throwbacks.

"Nifty" Says: Sales and good appearance go nd in hand. Custamers go for the clean, true edges and richer texture of Duraplastic-made products.



Makes Superior Concrete Products at No Extra Cost

UNITED STATES STEEL HOUR-Televised alternate weeks - See your newspaper for time and station

#### **INDUSTRY NEWS**

#### "Construction City"

GRAND JUNCTION INDUSTRIES, INC., a recently formed corporation, has announced plans to build "Construction City" on a tract of land at Grand Junction, Colo. The "city" will include a ready-mixed concrete and sand and gravel plant with a daily capacity of 2000 tons; a steel fabricating shop and yard; truck terminal; union truck dock; circular glass-wall restaurant and bar with a second story outdoor dining area shaded by a helicopter deck; construction and mining equipment display slabs extending from the circular structure; and two buildings housing offices and shops. The company will operate the ready-mixed concrete plant, leasing the other facilities to oil, gas, uranium, drilling, industrial supply firms, construction, trucking and other firms. Total cost of the project has been estimated at \$2,000,000. Charles C. Weidlein, Grand Junction, Colo., is president of the firm, and Cyril Porter Dickson, Denver, Colo., is secretary-treasurer.

#### **Adds Batching Plant**

THORN ROCK PRODUCTS Co. recently started operations at its concrete batching plant at Orem, Utah. Plant equipment includes a reclaiming tunnel, 4800-bag capacity cement silos, and a fleet of transit-mixer trucks. The aggregate is washed, sized and graded at the company's Provo, Utah, plant, which is operating in coordination with the batching plant.

#### Concrete Products Plant

MARIETTA CONCRETE CORP., Marietta, Ohio, has purchased a plant in Jamestown, N. Y., from Conroc Concretes, for the manufacture of concrete silos and industrial storage bins, as well as concrete block and concrete building products.

#### **Concrete Products Plant**

Kasson Concrete Corp., newly organized by Victor Anderson and Ray Hemenway of Albert Lea, Minn., has opened a concrete products plant at Kasson, Minn. Production will include precast concrete steps, septic tanks, window sills, coping, lintels, and other concrete products. Mr. Hemenway also operates a similar plant at Albert Lea.

#### **Dry Mix Plant**

DRY MIX CONCRETE, LTD., a recently formed corporation, has built a plant at Winnipeg, Ont., Canada, for the manufacture of Sakrete, with a daily capacity of 1500 90-lb. bags. Sakrete, Inc., Cincinnati, Ohio, is also

negotiating with companies in Sidney, Australia; Auckland, New Zealand; Montevideo, Uruguay; and Brazil, for the purpose of licensing firms to manufacture Sakrete.

#### **Cover Picture**

On This Month's Cover is a view looking down one aisle of the very extensive exposition of equipment at the National Concrete Masonry Association annual convention in Cleveland, Ohio, January 24 to 27. This busy scene in the exhibit halls of the Municipal Auditorium building was to be found every afternoon of the convention. During the morning, the business sessions of the convention were held in the Music Hall. It was the consensus of opinion that the 1955 show was the biggest and best that has been held by the association.

#### **Chief Engineer**

HENNING DE BANG has been appointed chief engineer for the design development and engineering division of the Baltimore, Md., branch of The Marietta Concrete Corp., Marietta, Ohio. Before joining the company, Mr. de Bang was associated with Ford, Bacon and Davis, Inc., consulting engineers of New York City, serving as field consultant on precast insulated wall panels which were developed jointly by Ford, Bacon and Davis and The Marietta Concrete Corp. A native of Denmark, Mr. de Bang came to the United States following graduation from the Royal Polytechnical College in Copenhagen. His engineering experience includes work as an industrial designer of cement plants, hydraulic design, senior stress analyst on airplanes and structural engineering of power stations.



Henning de Bang

GRAND CANYON STONE Co., Phoenix, Ariz., has been purchased by Glenn E. Hutton and J. W. Van Unen from G. W. Davis and James Copenhaver. The firm, previously known as Western Art Stone Co., manufacutrers artificial cast stone.

OTTO BUEHNER AND Co., is building a concrete products plant at Salt Lake City, Utah, at a cost of approximately \$100,000. The plant will manufacture pre-stressed and pre-cast concrete columns, beams, channel floor slabs, etc.

ATLANTIC ENGINEERING AND CONTRACTING Co., INc., has opened a ready-mixed concrete and precast concrete products plant at Brunswick, Ga. Walter Mendenhall, president, and Claude Chapman, vice-president, recently acquired sole ownership of the firm.

J. C. COSTIGAN of Elkader, Iowa, has started operations at a ready-mixed concrete plant at Waukon, Iowa. Plant facilities include weighing equipment, bins, loading equipment, and transit mixer trucks.

Ken Shaffer of Bismarck, N. D., has purchased an interest in Atlas Ready Mix. Other owners in the company are James Igoe and Al Braun. Mr. Shaffer is manager of the Bismarck plant, and Mr. Braun has been named manager of a new plant at Minot, N. D.

THE FRED M. STOWELL CONCRETE Co., Tulsa, Okla., has been sold to Ed F. Rice and Otis E. Nidiffer, also of Tulsa. The firm name has been changed to Tulsa Ready Mix Concrete Co., with Mr. Rice as president and Mr. Nidiffer as secretary.

VONDER HAAR SAND AND GRAVEL Co., St. Louis, Mo., has started operation of its new Meramic concrete plant, located along the Meramic River, near Hillsboro, Mo.

Stoux Center Ready Mix company has been established at Sioux Center, Iowa. Glenn Brinkhuis, manager, will also continue producing sand and gravel and concrete block.

Holzer Sand and Gravel Co., Lemay, Mo., has added ready-mixed concrete to its line which includes sand and gravel and other building materials.

DEDMON'S TRANSIT CONCRETE MIX has been established at Shelby, N. C., owned and operated by the Dedmon family and Ed E. Branton.

Universal Concrete Pipe Corp. has announced plans for a high-pressure concrete pipe plant in Muskogee, Okla.'s new flowline crossing of the Arkansas River.

## Another BESSER Boosier

## Etna Plant Uses BESSER Equipment Exclusively for Producing Quality Block

At the Etna Concrete Block Company plant near Pittsburgh, the emphasis has always been on QUALITY. That's why Etna has always used BESSER machines.

The Company started to manufacture block in 1918 with a Besser Face Down Block Machine. A few years later they added a second Besser Face Down Machine. In 1947, Etna installed a modern VIBRAPAC and this machine is still giving excellent service. Current production runs to 1,200,000 units (8" or equivalent) annually. About 75% is used for the construction of homes.

Charles Turcic, General Manager, states: "We bave used only Besser Equipment since starting in the block business and bave found nothing to compare with it in all these years". Although competition is keen in Pittsburgh area, Etna easily meets competition with Besser Equipment.



Officials of the Etna Concrete Block Company, Etna, Pa. Charles Turcic, owner, flanked by his son, Charles A. Turcic, Jr., and Tom Banjavcic, plant superintendent.

Besser Vibrapac operating day-in and day-out the Fina plant. The company reports vis-

\*This is the 116th of a series of ads featuring leaders in the Concrete Products leaders who are stepping up block production with Besser Vibrapets.

Besser Vibrapac operating day-in and day-out at the Ema plant. The company reports victually no down-time. The machine is fully automatic. Hand labor is reduced to pushing a switch button and guiding a power offbearing hoist.

Yard scene at Etna plant. Stock piles are low because of the big demand for Vibrapac Block.

BESSER COMPANY

Complete Equipment for Concrete Block Plants

BESSER A 6200-179C

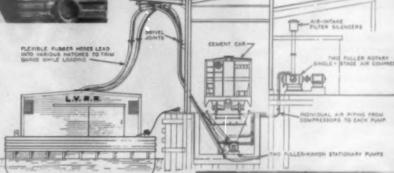
World's Loading Manufacturer of Concrete Block Machinery



AUZ does it ...

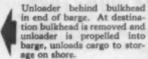
SPEEDIER
CLEANER
MORE EFFICIENTLY

Hoses entering hatches of barge. Cement car in shed "spotted" over Fuller-Kinyon Pumps in pit. Fuller-Kinyon Unloader in doorway, end of barge.





Two Fuller-Kinyon Stationary Pumps in pit. Pumps convey to barge at rate of 900-1000 bbl. an hour.





## FULLER-KINYON SYSTEM unloads cars . . . conveys to barges . . . unloads barges for Lehigh Valley Railroad

In order to reduce the overall cost and speed up handling of bulk-cement shipments at its Jersey City terminal, Lehigh Valley Railroad engineers installed the Fuller-Kinyon Conveying System. Fuller-Kinyon Stationary Pumps convey from cars to barge, and Fuller-Kinyon Remote-Control Unloaders convey from barge to storage at various points in New York harbor . . . speedy, efficient, time-saving handling from the time cars arrive until final delivery to the consumer.

The pumps for unloading from cars to barge, convey through two conveying lines at rate of 900 to 1000 barrels an hour. The unloader has a rated capacity of 150 barrels an hour. One man operates

and controls this machine by means of a flexible electrical cable and hand-control switch...start and stop, to right or left, forward or backward, wherever cement is to be picked up in the barge.

Air for the Fuller-Kinyon Stationary Pumps is supplied by two Fuller Rotary Compressors, each having a capacity of 614 c.f.m., at 12-lb. pressure. These compressors are installed on the pier adjacent to the car-unloading station.

If you are interested in efficient handling of bulk cement, write for Bulletins FK-20C and FK-27, illustrating and describing cement handling with Fuller equipment.

P-155

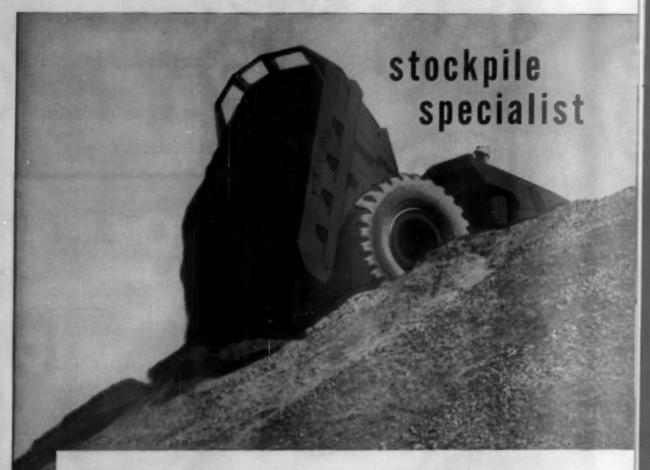
DRY MATERIAL CONVEYING SYSTEMS AND COOLERS-

FEEDERS AND ASSOCIATED EQUIPMENT

#### FULLER COMPANY, Catasauqua, Pa.

GENERAL AMERICAN TRANSPORTATION CORPORATION SUBSIDIARY

Chicago · San Francisco · Los Angeles · Seattle · Birmingham



#### **KOEHRING 6-yard DUMPTOR®**

puts stockpiling on a fast, shuttle-haul basis. There's no need to turn at the loader, or on top of the pile, because constant-mesh transmission gives full-speed travel in either direction. This no-turn advantage saves at least 2 slow turns on every trip . . . cuts 30 seconds off normal cycle time.

To dump, operator drives up to edge of stockpile, trips the body-release lever . . . and the gravity-dump body instantly tilts 70°. Fast dumping action kicks the load out over edge of bank, saves a lot of dozer clean-up on the pile. There's no 15 to 25-second wait for slow-acting body hoists. What's more, gravity-dump never balks, never wears out.

Let your Koehring distributor show you what these practical Dumptor advantages can mean in increased production and lower costs on your stockpiling and other off-road hauling jobs.







KOEHRING COMPANY, MILWANKER 15. WISCORSIN ISUBSIDIARIES





Johnson Concentric Batcher provides these practical advantages for fast, economical weigh-batching of aggregates and cement:

Concentric arrangement of aggregates around the cement batcher discharge gives central cement feed. This prevents "gumming", reduces dusting, pre-shrinks materials. All ingredients are intermingled as they flow through discharge.

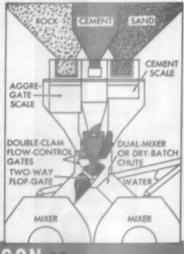
© Cement, concrete's most expensive ingredient, is weighed individually on a precision-beam scale, in a separate batcher hung within the aggregate hopper.

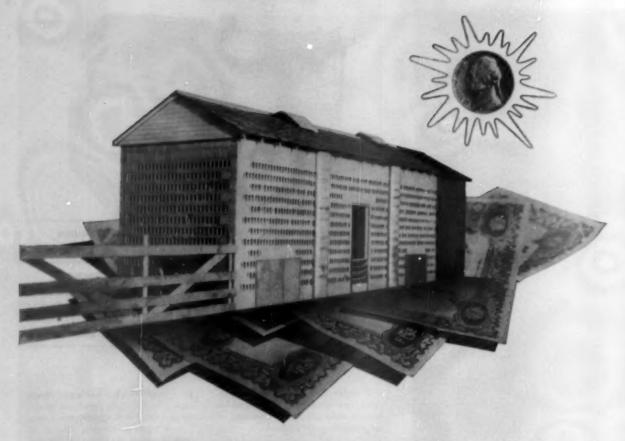
Adjustable rate of discharge on cement permits extremely accurate ribbon-feeding. Semi-automatic cement arrangement cuts off just ahead of final weight.

Aggregates are weighed on accumulative dial scale, or on individual weigh-beam scales.

■ Two-way discharge with dual chutes are available for charging 2 stationary mixers, or for charging into 1 stationary mixer and a truckmixer, or dry-batch truck. Concentric Batcher sizes range from 2 to 8 cu. yds., and can be arranged for 2 to 8 aggregates — plus 1 to 4 types of cement. Choice of controls: fully automatic air-ram operated, semi-automatic, or manual, to best suit your needs.

Let your Johnson distributor show you all the other production advantages you will get with one of these patented Concentric Batchers in your plant. See him, or write to us.





#### MONEY GROWS ON FARMS-

from new uses for concrete units!



This concrete corncrib and grain bin is one farmer's answer to losses suffered from rats, rot, and rust. New uses like this for concrete units are your answer to the need for increased sales.

It took only a little imagination to see that regular concrete blocks turned sideways provide a well-ventilated cornerib. Your own imagination will point to many new uses for your products in your own vicinity.

And for products that will give complete satisfaction, include Lehigh Cement in your plans. Remember, there's a Lehigh Cement to help you produce quality units with any manufacturing process.

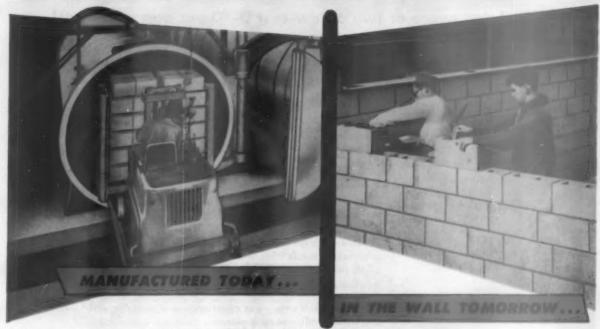
#### LEHIGH

PORTLAND CEMENT COMPANY

Allentown, Pa.

LEHIGH PORTLAND CEMENT LEHIGH EARLY STRENGTH CEMENT LEHIGH AIR-ENTRAINING CEMENTS LEHIGH MORTAR CEMENT

## FAST Masonry Unit <u>Curing</u> PROVIDES FAST Masonry Unit <u>Profits</u>!



#### **RECO Autoclaves Assure:**

- 1. INCREASED Production Speed
- 2. INCREASED Delivery Speed
- 3. INCREASED Volume
- 4. INCREASED Product Quality
- 5. DECREASED Production Costs
- 6. DECREASED Handling Costs
- 7. DECREASED Inventory Needs
- 8. **DECREASED Storage Requirements**

The quicker you can cure and deliver masonry units, the quicker you'll receive the profits on each job. And RECO steam pressure autoclaves enable you to cut your curing cycle from 28 days to 9 hours! That means the building products you make today can be delivered tomorrow! And that's just one of 8 important ways in which RECO Autoclaves can help you increase your profits all year long.

As one of the most complete and authoritative autoclave production centers in the nation, RECO invites you to call, write or wire at any time for free consultation, recommendations and estimates on custom-built autoclaves or other fabricated units to meet your plant's special requirements.

autoclaves or other fabricate special requirements.

### Richmond Engineering Co.

METAL FABRICATORS SINCE 1914

7th & Hospital Sts., Richmond, Va.

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Please send without obligation......copies of your NEW AUTOCLAVE CATALOG.

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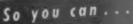
## Better pre-cast concrete products at lower operating costs

with only an ounce or two of low-cost D-40 per bag of cement!



714 W. Olympic Blvd., Los Angeles 15, Calif. 20 North Wacker Drive, Chicago 6, Illinois Mercantile Securities Building, Dallas 1, Texas

## LOOK WHAT WE DID TO THE TRUKMIXER



- HAUL MORE LEGAL PAY LOAD
- ON SHORTER WHEEL BASE TRUCKS
- WITH GREATER ALL-AROUND EFFICIENCY AND LESS MAINTENANCE



#### We moved the engine to the left rear

to keep it from taking up space between cab and mixer and to assure easier access for maintenance and periodic Inspection. Inexpensive, easily cleaned air filter protects radiator. Drum is slightly off-set to the right to equalize weight of leftside mounting engine and transmission, assuring balanced stability and equalized thre loading.

#### We located the transmission at the side

of the combined pedestal and flush water tank to reduce cab-to-rear-axle dimensions 20 inches, so you can utilize more of the legal weight allowance on the front axle. Transmission is easily accessible even with close clearance between mixer and cab. Combining the flush water tank and pedestal reduces weight about 1000 lbs., and substantially lowers the center of gravity of the mixer.

Now you can have a really big truck mixer to carry maximum pay loads and still be well within legal axle loads for a highly maneuverable, short wheel base truck. You can baul a load or two more per day, as there's less time lost jockeying for position with a short truck. And these 41/2, 51/2 and 61/2 - cu. yd. Hi-Boys are guaranteed to mix 1/2 - cu. yd. more than their normal rating.

When you add these exclusive new features to previous Hi-Boy advantages, you've got a more practical, better performing truck mixer that's especially designed to give you really profitable operation. Ask your Blaw-Knox distributor today for complete details.

#### We made these other design improvement

- Large diameter short drum mixes even zero slump concrete fast and thoroughly. Concentrates batch at front end, thus moving center of gravity forward to reduce cab-to-rear-axle requirements and assure better weight distribution.
- Big inner cone permits fast charging . . . 8-9 seconds per yard.

  • Blade design eliminates segregation during discharge.

Pittsburgh 38, Pa. Offices in Principal Cities



#### with mobile 2-way radio

. . . and the plus profit accrues after the cost of radio has been deducted

Count up the mixers you operate and multiply by \$3.00. There you have an estimate of the *clear profit* you can enjoy every day from every truck using rugged, Motorola 2-way radio.

In addition, better satisfied customers create more business, thanks to the perfect teamwork possible with 2-way radio. Management is kept up to the minute on the progress of every job, and can plan a more efficient work day . . . getting more production out of every mixer.

When a truck arrives at a form that's not ready, it can be instantly directed by radio to another site nearby . . . mechanical breakdowns are quickly reported and repaired, saving loads and damage . . . expensive overtime is held to a minimum.

Motorola will have a trained engineer show you how 2-way radio will make more money for you from the day it's installed. Write or phone TODAY.

Motorola, the complete communications supplier, will furnish the equipment YOU need on the terms YOU want—cash purchase, installment plan, lease (with or without equity) . . . with optional installation and maintenance all included in a single contract,



Dispatcher reroutes trucks when necessary, dispatches help for emergencies instantly.



Driver lets dispetcher know when he arrives, job progress, when he'll be back.

## Motorola

2-WAY RADIO

Motorola Communications & Electronics, Inc. A SUBSIDIARY OF MOTOROLA, INC.

4501 AUGUSTA BLVD., CHICAGO 51, ILLINOIS . ROGERS MAJESTIC ELECTRONICS LTD., TORONTO, CANADA

# Concrete Septic Tanks Increase Your Profits



# Low Production Costs

# Thomas Steel Forms

Self-Aligning • Self-Assembling

Most concrete product manufacturers are looking for kindred lines... Products which can be manufactured with present overhead and labor, without interrupting existing production schedules... That's where we fit into your picture.

You can share in this high profit concrete Septic Tank business with a small investment in Long Lasting, High Production Thomas Steel Forms. Perfect Forms engineered to produce perfect Septic Tanks which far exceeds today's standards of quality at a fraction of present direct costs.

- · Beat all price competition
- · Produce better looking tanks
- · Build more tanks per form
- · Less non-productive labor

Get complete details now. Write, wire or phone

Thomas Steel Forms

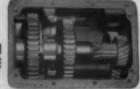
25257 W. Eight Mile Rd. Detroit 19, Michigan



GEAR DRIVE Mixers

The finest transmission in any mixer. Poote Bros. aircraft specification, 2-speed transmission, helical cut awars and ground shafts heat-treated to 600 Brinoll.

CHAIN DRIVE Mixers



Clark heavy duty 2-speed transmission, equipped with special remote control shifting tower—maximum power in a minimum space.

with 2-SPEED Transmissions
as STANDARD Equipment

Smith puts 2-speed transmissions in ALL Smith Truck Mixers because they help you to mix and discharge quality concrete...also lower your maintenance costs.

There is a minimum amount of mixing required to produce quality concrete — ASTM specifications say 50 revolutions — but there is also a maximum amount of mixing allowed. Without a 2-speed transmission, it is almost impossible to throttle down low enough to stay in the required mixing range on medium length hauls, much less on long hauls, and still have proper charging speeds available. If you agitate, there is never a case where you don't need the 2-speed transmission.

Discharge is affected by drum speed — especially with low slump concrete which is sticky and does not want to flow. A slow speed, from 3 to 5 r.p.m., usually works best. You can get this range of speed easily, and without laboring the engine, with the Smith 2-speed transmissions. This is also true for curb and gutter jobs and narrow form pours where absolute control is necessary.

Maintenance costs for the entire mixer are lowered because of the 2-speed transmission. The engine runs at an efficient speed, minimizing sludge and carbon formation. You turn the drum only as much as necessary. Fewer revolutions mean less wear.

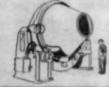
Remember, there are over 20 sizes and styles of Smith Truck Mixers tailormade to meet your individual needs . . . and they all have 2-speed transmissions as standard equipment. For complete details, contact your nearby Smith distributor or write:

THE T. L. SMITH CO. • 2885 N. 32nd Street • Milwaukee 10, Wis., U. S. A.

Affiliated with ESSICK MANUFACTURING CO., Los Angeles, California











Builders of Better Mixers for More Than 50 Years

A 8341-1P



### DESIGNED with a BACKGROUND of 3/8 YARD EXPERIENCE

Evidence of highest quality engineering and construction includes alloy steels and forgings • anti-friction bearings • modern transmission design with involute splines to add strength and reduce wear • straight-in-line engine mounting with torque converter • trunnion supported tapered drums to eliminate bending stress on drive shafts • easily accessible hydraulic clutches • minimum number of main machinery gears enclosed in one-piece cast gear case force feed lubrication • self-aligning replaceable hook shoes distribute applied pressure over maximum area • interchangeability of parts simplifies maintenance, cuts costs. All these UNIT advantages mean more profitable operations for you.

# Why it's BEST to INVEST in modern UNIT models

Because each feature has been proven to contribute substantially to the Life, Performance and Efficiency which have made present and previous UNIT products readily acceptable.

Send for Bulletin Now Us	e Coupon!
UNIT CRANE & SHOVEL CORP. 6431 W. Burnham St. • Milwaukoo 14, Wis., U.S.A.  Goared to boost your parainas	UNIT CRAME & SMOVEL CORP.  Allwaviace 14, Wiscensin  Please send me your new Bulletin on the UNIT CHALLENGER Model 510.
Geared to boost your earnings!	Nens
	Address
201 070 614	City
	State
	A 9307 1PC



You're going to save real money per cubic yard of air-entrained concrete when you use Ertrane C, Nopco's quality air-entraining agent. So don't let its alightly higher price prevent you from trying it.

Here's how you save, as proved in practice by leading coment manufacturers and concrete mixers:

- 1. No coustics needed. Unlike some powdered additives, Ertrane C makes a uniform solution in either hot or cold water, without adding caustics to neutralize.
- 2. Ease of handling and storage. Ertrane C is packaged in a 60 lb. multiwall bag. No danger of freezing.

- 3. Lower freight rates. Ertrane C is 100% active; you are not paying freight on water.
- 4. Flexibility of use. Ertrane C can be used either dry or in solution. 3 bags (180 lbs.) of Ertrane C into 125 gallons of water makes a 15% solution.

Write today for complete information on Ertrane C. Nopco Chemical Company, 638 Industrial St., Harrison, N. J.



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 National Concrete Masonry Association convention in Cleveland, Ohio, reveals expanded research and sales promotion activity to meet increased competition



Typical scene of activity in that section of the exhibit hall largely devoted to concrete products machinery and related products

# Long Range Program for Quality and Sales Promotion Unfolds

REGISTRATION for the 35th annual Concrete Industries Exposition of the National Concrete Masonry Association, held January 24-27 at the Cleveland Public Auditorium was approximately 4700 to establish a new high for the industry.

The exposition of machinery and supplies for the concrete masonry industries and for ready-mixed concrete producers was the largest and most successful to date, with the auditorium filled each afternoon by producers seeking the latest in machinery development. Many hundreds of thousands of dollars were represented in the displays, and exhibitors found the exposition attractive from the standpoint of sales. It was obvious from the interest shown, that the industry views the immediate future with optimism.

All regular convention sessions were held in the mornings and the exposition was open each day from 1 p.m. to 6 p.m. so that there would be no conflict of interest. Presiding officers for the sessions were president M. E.

Rinker for the opening meeting which started with a business session, Otto Buehner was chairman for a session largely devoted to promotion, Benjamin Wilk presided for the technical meeting and president-elect S. Carl Smithwick was chairman of the concluding session.

The 1956 annual meeting, which will have no exposition, will be held January 30 to February 2 at the Roosevelt Hotel, New Orleans, La. St. Louis will be the meeting place for the 1957 annual convention and the Concrete Industries Exposition which will be held in Keil Auditorium.

### **New Officers**

S. Carl Smithwick, Smithwick Concrete Products, Portland, Ore., was elected president of N.C.M.A. to succeed M. E. Rinker. New vice-presidents are Leon K. Camp, Camp Concrete Products Co., Columbus, Ga.; W. A. Neff, Neff Concrete Products Co., Danville, Ill.; and Earl W. Peterson, Ideal Cement Stone Co., Omaha, Nebr. Carroll Strohm, Jr., Nashville

Breeko Block and Tile Co., Nashville, Tenn., was re-elected secretary-treasurer.

The three new directors, elected for five year terms, are Harvey H. Black, Domine Builders Supply Corp., Inc., Rochester, N. Y.; Elmer A. Peterson, Rocklite Products, Ventura, Calif.; and Ruedy A. Utiger, Cinder Concrete Products, Inc., Denver, Colo. Walter C. Coupland, Argo Block Co., Ltd., Cooksville, Ont., Canada, was made a director to represent the Canadian concrete masonry industry on the board of N.C.M.A. for a term of one year.

### **Executive Secretary's Report**

Following the invocation, election of directors and treasurer's report before the opening session, executive secretary E. W. Dienhart appraised the association's activities and plans for 1955 in a talk entitled, "Where Do We Go From Here?"

Last year marked a turning point to intense competition which had been anticipated in planning for the association, said Mr. Dienhart. Accordingly steps were taken to provide funds for a vastly expanded program of promotion which is now in effect. This has also been accompanied by an increased engineering program. The two departments now have some 50 projects in process. This program, said Mr. Dienhart, was planned by the board of directors two years ago in San Francisco as a long range plan.

### President's Address

President M. E. Rinker, in his address at the opening session, expressed his appreciation for the cooperation



Throngs looking at ready-mixed concrete equipment



Views taken from the main stairway of the exhibit hall showing three aisles of exhibits. The photographs were taken in the marning

and help he had received from the staff, officers, directors and committees during his term of office. He gave specific examples to show the potential for concrete masonry, plugged for support of the association in order to carry on its work on an enlarged scale and called attention to the accelerated efforts of competitive industries as they set their sights on gaining a larger share of the market.

More and more technical and promotional material is required, he obaerved, to meet the growing demands for improved quality and service. He considers a long-range continuing research program to be the greatest single aid to the industry.

He paid high compliment to the many committee members who have given their time and energy to the welfare of the industry and he said that the joint efforts available through association activity constitute the cheapest available insurance to maintain a sound industry.

For 1955, he cautioned that producers not underestimate their competitors and that they pool their resources and knowledge to meet the challenge. He pointed to the expanded research program of the clay products industry and the plans of the lumber and steel industries to capture a larger share of the building market.

President-elect S. Carl Smithwick, in assuming chairmanship of the concluding session, paid tributes to retiring president M. E. Rinker and the staff of N.C.M.A. for their accomplishments. He told of the fine cooperative spirit he had observed during his five years of service on the board of directors and expressed his appreciation for the efforts of the many working committees. The need for continued united effort in order to preserve the gains of the industry was his plea.

### **Safety Competition**

Earl W. Peterson, chairman of the accident prevention committee, presented the N.C.M.A. safety contest



Certificate awarded by N.C.M.A. to Selma Concrete Products Co., for operation without a lost-time accident during 1954. Similar certificates were awarded to other companies having similar records

trophies to the winning companies in the first annual safety contest. There were 77 participating plants and awards were based on three production categories. Class A is for plants with annual production exceeding 5 million 8-in. equivalent units, class B for those with a production between 1.5 and 5 million units, and class C for plants with production less than 1.5 million units.

Winners were V. Paturzo Bro. & Son, Baltimore, Md.; Ideal Cement Stone Co., Omaha, Nebr.; and Concrete Products Corp. Division, Fischer Lime and Cement Co., Memphis, Tenn. Thirty-two plants completed the 12-month period ended July 31, 1954, without a lost-time accident and each received a "certificate of achievement" scroll. Frequency rates are on the way down for the industry since the accident prevention program started.

Complete results of the competition were printed in the first issue of the N.C.M.A. Safety Bulletin published January 17, 1955.

### Membership

W. R. Ireland, chairman of the membership committee, summarized growth of the association at the concluding session. Thirty-two producer members, 20 associate and 6 contributing members were added in 1954. Twenty-one members, 5 associate and one contributing members were lost during the year. Total membership as reported was 559 regular members, 89 associate members and 50 contributing members. Mr. Ireland presented Fred Reinhold a \$20 hat for being responsible more than any other member for adding to the list.

### **Washington Activities**

"Recent Developments in Washington as They Affect the Concrete Products Manufacturer" was the subject of a talk by Theodore "Ted" Leba, Jr., manager of the Washington, D. C., office of N.C.M.A. In describing the reasons and need for maintaining a Washington office, Mr. Leba outlined the three-fold purposes for representation.

Referring specifically to Air Force construction programs, Mr. Leba emphasized the fact that decisions as to materials and methods of construction will be made at the local level. He said the Air Force has instructed its



Post-presidents, left to right: Sam Paturzo, and M. E. Rinker; executive secretary, E. W. Dienhart; and president-elect, S. Carl Smithwick



before the milling throngs of visitors were permitted to enter in the afternoon

installation representatives at District Engineer offices to avail themselves of the advice that manufacturers have to offer about their products. The Air Force, he said, is encouraging representatives of industry to contact the field offices early in the design states."

On the subject of exposed concrete masonry walls in home construction, Mr. Leba said that so far it has not been possible to obtain Federal Housing Administration acceptability of exposed painted interior block walls on a national basis. "The problems of gaining acceptance of exposed walls," he said, "must be solved on a local level by producers and builders by demonstrating quality units, sound design and excellent workmanship."

### "Block Can Be Beautiful"

Miss Elizabeth Gordon, editor of House Beautiful, took the theme that concrete block can be beautiful. Her specific subject was "Architectural Possibilities of Concrete Masonry in Home Construction."

Miss Gordon made enthusiastic references to the model room of exposed concrete masonry which was part of an exhibit sponsored by her magazine at the Los Angeles County Fair in September. She said this exemplified new design concepts as well as a new system of constructing concrete block walls. Similar designs, she said, are being incorporated in exhibits for home building shows to be held in Phoenix, Ariz., and Salt Lake City. This new system is based on a new type of concrete block designed by Architect Frank Lloyd Wright. Fifty new houses incorporating the use of the new block are now on the drawing boards, Miss Gordon said. She urged N.C.M.A. members to work to get the new type of block into machine production so their cost could be reduced. She suggested that 100 to 200 demonstration houses using the new block should be built as soon as possible in order to attract nation-wide attention.

### **Trade Relations Report**

In a report of the Association's Trade Relations Committee, producers were told that labor unions are as much concerned as they are over the inroads of materials and methods of construction which replace concrete masonry. This reference was to "tiltup" wall construction and the so-called "metal skin" on multi-story buildings. The committee report was delivered by Fred Reinhold, Buffalo, N. Y., acting for Horace W. Bush, committee chairman who was unable to be present. The report described work of the Allied Masonry Council in opposing types of construction which replaces masonry.

Mr. Reinhold referred to union label industrial shows being put on by A.F. of L. unions and recommended that block manufacturers cooperate with such shows. He said the committee also recommended cooperation with the Bricklayers Union in their apprentice training program.

Wm. H. Gove, vice-president EMC Recordings Corp., St. Paul, Minn., gave an inspirational talk on salesmanship and merchandising.

### Promotion

Promotion in one form or another was the theme of the second day's program. A technicolor motion picture entitled, "It's Everybody's Business," produced by the United States Chamber of Commerce, explained how



Elizabeth Gordon, editor, House Beautiful Magazine, convention speaker

the American system of free enterprise has given this country the highest standard of living ever known. Otto Buehner, chairman of the N.C.M.A. Promotion Committee, introduced the film.

### **Experience** in Kansas City

Aggressive promotion of concrete masonry for home building in the Kansas City area was described by Tip Brown, secretary-manager of the United Masonry Association and the Mo-Kan Concrete Products Association. His talk was entitled, "Unit Masonry Association Points the Way to a Bigger Masonry Construction Market." Mr. Brown said in part:

"Our 850 members are drawn from every segment of the masonry industry — labor, contractors, producer and distributor, in fact all who make their living, wholly or in part from the industry.

"Our advertising committee sets the policy and the pace of our promotional efforts. The committee was not slow in proposing an advertising agency to the trustees after competitive presentations by several agencies. With approval of their selection, the committee and the agency went into a huddle and agreed that the local masonry house situation presented the most difficult problem. Nationally, the masonry industry gets an estimated 20 percent of the new homes market. In Kansas City we get less than 2 percent. To better the condition, it was necessary to battle with established building practices and well organized competition. For several months large display advertisements were run in the metropolitan Sunday paper presenting the better living advantages of masonry homes. Nothing dramatic came of this effort but as frequently happens under concentrated effort, a door opened to reveal the true situation. People who wanted new homes, had to take what the market offered. No masonry homes were being built on a speculative basis. We had to get some speculative builders on our staff. Intensive work soon produced eight or ten home builders who agreed to give estimating and construction services on masonry houses. Almost immediately, three masonry houses were started by a new firm on a speculative basis and other builders indicated a brisk start would be made with the opening of the construction season.

"The advertising committee set a goal of 200 new masonry houses in 1955. They agreed to run a series of newspaper display advertisements on the merits of masonry homes and list the names of approved builders who would give service to prospective purchasers.



Tip Brown, convention speaker and secretary-manager, Mo-Kan Concrete Products Association

"Our code committee found at its first meeting several sources of needed changes in local building restrictions that would strengthen fire regulations, increase public safety and health and which would increase the use of masonry units by the thousands and insure employment to masons.

"Finding new and improved uses of masonry both in design and workmanship is a fast way to build a bigger market. Contests provide incentives. A good example, we think, is our annual home show held in April.

"We set up a monthly budget of \$1,265 and apportion two thirds to advertising and one-third to overhead. The two-thirds gave us \$400 a month of newspaper and magazine advertising, \$300 for prizes, contests and exhibitions and \$125 for advertising agency fee. The one third provides an office and secretary-manager. Fourteen trustees manage the association through monthly meetings. The gains from better acquaintance are not to be over-

looked and four membership dinners are regularly scheduled each year."

#### 400 Million Dollar Market

W. P. Markert, N.C.M.A.'s director of promotion, analyzed the selling job facing block manufacturers in 1955, in a talk on "How to Capture a Large Share of the Building Dollar," illustrated with statistical graphs and charts.

"The survey experts tell us that we've had an increase of something like 4 to 6 percent in block production this past year," Mr. Markert said. "That's the peak year in a decade that has shown a 400 percent increase in our industry output. There's a good chance that we may reach that two billion block mark this coming year."

In summing up the market situation, Mr. Markert said the biggest sales opportunities for concrete masonry manufacturers in 1955 are in new homes, schools, stores and shopping centers, offices and warehouses.

### Two Architects on Program

Two architects, one the president of the American Institute of Architects, were featured speakers on the Tuesday program. Ben John Small, A.I.A., of the New York firm of LaPierre, Litchfield & Partners, spoke on "How the Architect Views Product Advertising and Promotion of Construction Materials."

"The ideal building product representative," Mr. Small said, "states clearly what his material is and does, where it should and should not be used, how long it has been on the market, whether it has the approval (if in New York) of the Board of Standards and Appeals, whether or not it has been tested by the National Bureau of Standards, and something about its availability and approximate cost in place. If he can cover these nine points in about ten minutes and leave with me a well prepared brochure

with his name, address and telephone number, I love him all the more."

Clair W. Ditchy, president of the American Institute of Architects, spoke on "The Architect Looks at Concrete Masonry." He told the block manufacturers that architects have much in common with concrete masonry producers. "The history of architecture is to a considerable extent a history of masonry, "Mr. Ditchy said. I want to assure you of our interest in your success. American architects are ready to take advantage of your product. They have found concrete masonry a readily available material. Architects are watching with great interest improvements of concrete masonry and extensions of the use of this material. We hope that the autoclave will come into greater use as a means of eliminating cracking."

### Part Played by P.C.A.

G. Donald Kennedy, president of the Portland Cement Association, sketched some phases of the early history of concrete and described the early fire resistance tests made in the Underwriters' Laboratories in cooperation with the National Concrete Products Association, the Portland Cement Association and the American Concrete Institute.

Mr. Kennedy outlined the various elements in the P.C.A. program toward improving and extending the uses of concrete masonry. In addition to a series of short study courses, a manual has been prepared showing approved methods of laying concrete masonry.

Universities and colleges, the speaker said, are being urged to include more information on concrete masonry in architectural courses of study.

He said that a full color booklet showing patterns, color and textures obtainable with concrete block was being prepared by the P.C.A. to promote exposed concrete masonry. There will also be a new color booklet, he said, showing both exterior and interior views of concrete masonry houses. The speaker also described the extensive advertising of concrete masonry homes being done by the P.C.A. in national consumer magazines as well as architectural, engineering and trade publications.

Mr. Kennedy said that the future of the concrete masonry industry will depend on its ability to continue growing under much more vigorous competitive selling than has been general during the past ten years, both in the markets it already enjoys and in new markets.

"While cooperation is traditional between N.C.M.A. and P.C.A. nevertheless — may I give you my



N.C.M.A. steff in a huddle, left to right: Executive secretary, E. W. Dienhart; director of promotion, W. P. Markert; assistant secretary, Evelyn Bouet; Washington manager, Theodore Leba, Jr.; and director of engineering, R. E. Copeland



G. Donald Kennedy, president of P.C.A., a convention speaker

personal assurance in behalf of all our members and staff of the fullest cooperation with the members, officers and staff of the National Concrete Masonry Association."

### **High Pressure Steam Curing**

Intense interest in the subject of high pressure steam curing was apparent from the attendance of some 400 at a symposium on that subject. The meeting had a panel to answer questions from the floor and there were plenty of questions to challenge the experts. Cedric Wilson, Texas Industries, Inc., chairman of the highpressure curing sub-committee presided, and his panel consisted of Noel Harter, Louis Freedman, Fred Reinhold, Harry W. Easterly, Jr., W. Ferguson, James Schwartz and John Selden. More complete details will appear in the April issue.

### **Technical Problems**

Work of N.C.M.A.'s Technical Problems Committee was described by Benjamin Wilk, of Detroit, the 1954 chairman of that committee.

"Some of you may think that there are very few problems for the industry to solve," said Mr. Wilk, "but if you had a chance to sit down with our director of engineering he could give you a list of more than 100 problems that face this industry if we keep our place in the construction field.

"Some of the important problems of the industry have already been solved through the work of the Technical Problems Committee and the director of engineering. As far back as 1951 an excellent report was made on the effect of elevated temperature drying on the compressive strength of concrete masonry units. A number of

additional reports have also been made on the effect of curing conditions on the strength of concrete.

"During the past summer our Technical Problems Committee had a very interesting meeting where the following subjects were discussed: block handling and delivery methods; comparative masonry construction costs; effect of faster machine cycling; and plant production efficiency.

"As a result of the paper on block handling and delivery methods, a permanent sub-committee has been appointed to study this subject.

"The papers prepared at our summer meeting are being further studied in order to determine which papers should be sent to the members.

"As you probably know, we have a special sub-committee on high pressure curing. This committee submitted a very interesting report and it also was responsible for a bibliography on high pressure steam curing prepared by a consulting engineer, who many of us have known for many years, Harry F. Gonnerman, who recently retired from the P.C.A.

"A most interesting job done by our committee this year was the formation of a long-range planning committee. It has been felt for some time that our engineering work does not have the background of long-range planning. It was evident that in order to meet the competition of the future that we must have a long-range program. It was fortunate that on this committee we had Jay Ehle, Paul Bronson, Ted Goudvis and Cedric Willson. They have come up with a report which we believe will open your eyes.

"The Corps of Engineers has made changes in its specifications requiring 30 percent moisture content in block instead of 40 percent required by the American Society of Testing Materials. This indicates a trend which means we must know more about our manufacturing and curing conditions than we do today. As new aggregates and new admixtures come into the

field it would be wise to have the Technical Problems Committee study these problems. As an example of something new, some experimenters have found that carbon dioxide has possibilities as a curing medium.

"But perhaps the most important problem in the industry is cracking. R. E. Copeland, our director of engineering, gave us an excellent report on this subject a few years ago but there have been new developments. Now we are emphasizing design of walls and structures as well as moisture content of units. The average architect does not seem to appreciate or understand volume change and what should be done to minimize cracking. We ourselves are not sure to what extent we should recommend reinforcement or control joints. If we add too much to the cost of a building because of our requirements we may put ourselves out of competition."

### **Building in Hurricane Areas**

Design and construction requirements for concrete masonry in areas subject to hurricanes were described by E. R. Mangotich, assistant engineer of N.C.M.A. His paper entitled "Hurricane Resistant Construction," was illustrated with slide pictures of hurricane damage to homes and other buildings and with design details.

### **Curing and Drying Methods**

Major research projects on curing and drying masonry units, carried out in the laboratories of the Portland Cement Association were described by C. C. Carlson, manager of the products and applications development section of the research and development division of the Portland Cement Association.

One of the projects described by Mr. Carlson related to an extensive examination of the physical properties of concrete block cured in steam at atmospheric pressure at various kiln temperatures ranging from 140 deg. to 210 deg. F. for various durations



Left to right: Walter C. Coupland, Argo Block Co., Ltd., Cookville, Ont., Canadian representative on the board; Elmer A. Peterson, Rocklite Products, Ventura, Calif.; Ruedy A. Utiger, Cinder Concrete Products, Inc., Denver, Colo.; and Harvey H. Black, Domine Builders Supply Co., Rochester, N. Y.

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and then rapidly dried in the same kiln to a moisture content of less than 40 percent of the total absorption. He said an important goal of this investigation was the development of an atmospheric curing and drying procedure which would lead to the production of block meeting the A.S.T.M. and federal specifications within a 24-hr. manufacturing cycle. A further purpose of the project was to compare the physical properties of concrete masonry units so cured and dried with those of companion units conditioned by other methods, such as low temperature steam curing and stockpile drying, 14-day moist curing, 14-day drying at normal temperature and high pressure steam curing. Mr. Carlson used slides in describing some of the results obtained.

The second project, Mr. Carlson said, was designed to find answers to a number of questions encountered in continuing efforts to solve the problem of drying shrinkage cracking in masonry walls. These questions were:

 How sensitive are plant conditioned block-to-job site moisture exposures, such as fog or rain?

2. How effective is the 40 percent moisture limit in controlling shrinkage cracking?

If block should be dried to equilibrium with humidities likely to be encountered in service, as some investigators have proposed, what should the moisture content be at these equilibrium levels.

In the course of the work another facet of the problem, the speaker said, wholly unlooked for in the initial planning of the project was revealed. This, he said, was the influence of atmospheric carbon dioxide on shrinkage.

### Military Design Problems

Problems encountered by designers of concrete masonry buildings in the present large military construction program and steps taken toward their solution were discussed by Harry Zackrison, office of the Chief of Engineers, Washington, D. C. Mr. Zackrison heads the Engineering Division, Military Construction. His subject was, "Concrete Masonry in the Military Construction Program."

On the size of the current military construction program, Mr. Zackrison said, "It is estimated that construction contracts in excess of one billion dollars in the continental United States will be placed by the Corps of Engineers during this current fiscal year."

"The National Bureau of Standards," the speaker said, "was engaged by the Corps of Engineers to make a country-wide survey of various types of water-proof coatings. In the course of this study, applied coatings of ce-



Plaque awarded to Ideal Cement Co. by N.C.M.A. for highest accident-free record in 1954 in Class B. Similar plaques were awarded to companies in Class A and Class C groups

ment-water paint, silicone treatments, oil paints, rubber base paints, stuccos, and pneumatically applied coatings applied under varying field and weather conditions were examined.

"These investigations indicated that of the presently available coatings, best results were achieved with the greatest economy with a two-coat coment-water paint application. These studies emphasized the care which had to be taken to apply the base coat. It must be carefully scrubbed in, properly cured, and for rough-textured walls, it should contain approximately 50 percent sand aggregate.

"We also investigate various solutions to problems of flashings, weep holes and other phases of design necessary to best achieve a weather-tight building. Out of these studies, it was found that, if cement-water paint were properly applied, and newly developed details of calking and flashing at spandrels and columns were incorporated, then leakage was virtually eliminated.

"In the course of these studies, it was determined that weep holes could actually contribute to leakage. As a result, we have concluded that the use of weep holes except in cavity walls at spandrel beams is undesirable.

"The ever present problem of masonry construction is that of control of shrinkage cracking. Laboratory studies are even now being actively continued in this field.

"The result of these test programs have been the subject of much consultation between representatives of the National Concrete Masonry Association and the Government. While test results have not been published, the findings are reflected in design criteria

presented to the National Bureau of Standards, Report No. 3079, 'Requirements for Concrete Masonry Construction,' which we have made available for the National Concrete Masonry Association for reproduction for the use of your industry.

"Significant among the many recommendations contained in these findings are the classifications of masonry units with respect to their characteristic of linear shrinkage, the requirements for low moisture content, (normally 30 percent minimum of total absorption), the requirement for 75 percent water retentivity of masonry mortars, and a summary of requirements for bond beams, control joints, and joint reinforcing." Mr. Zackrison used graphs, charts, design details and pictures of various types of military construction to illustrate his remarks.

"You have provided our designers with an excellent selection of block shapes," said Mr. Zackrison, "however, in 4-in. walls, we have not been able to develop a control joint using the presently available flush end block which has adequate lateral stability. I believe a control joint block for 4-in. walls could be developed, which would be of material benefit."

### Importance of Research

The urgent need of an augmented technical research program for the concrete block industry, was emphasized by R. E. Copeland, N.C.M.A. director of engineering, in his address, "Are Engineering and Technical Research Important?"

He enumerated and discussed briefly various technical research projects which played a vital role in promoting wide public acceptance of concrete masonry.

"Perhaps of greatest importance," the speaker said, "were the fire tests at the Underwriters' Laboratories, Portland Cement Association and the National Bureau of Standards. These opened up entirely new markets for concrete masonry in fire and party walls and wherever building codes required walls of two hours or greater fire resistance. Of almost equal importance to the industry was the reduction in fire insurance costs for concrete masonry homes and buildings achieved as a result of the fire test data.

"The first significant structural tests on concrete masonry were conducted at Columbia University in 1921 and 1922 and involved compressive tests of piers built of concrete brick and clay and sand lime brick.

"The most extensive investigation of the structural properties of concrete masonry walls was conducted at

(Continued on page 172)

# PREVENTIVE Maintenance In the Ready-Mixed Concrete Industry

By JAS. A. NICHOLSON\*

29: A producer views the ready-mixed concrete business. Third article of series on lubrication

THE MOST IMPORTANT SINGLE FACTOR in preventive maintenance is proper lubrication. Better lubrication means improved equipment performance, longer operating life, fewer breakdowns, smaller repair bills, less overhauling, closer control over lubricant inventory and substantial reductions in maintenance costs. Proper lubrication pays off in longer life, lower costs and improved efficiency.

Producers enjoying low maintenance costs and high operating profits don't beat their equipment to death. These producers insist upon regular inspection and lubrication of their truck mixers and plant equipment. They carefully select and train competent personnel to do the greasing job, provide adequate facilities and quality lubricants, allow their lubricating employes sufficient number of labor hours and insist that certain inspection practices accompany each lubrication. They place responsibility with a key employe to see to it that all pieces of equipment are given regular, systematic attention.

"Bud" and "Jack" Winkworth of The Winkworth Fuel and Supply Co., Detroit, Mich., told me that the whole story of a successful preventive maintenance operation can be summed up in one sentence: "The efficiency of a preventive maintenance program is largely dependent on the personal integrity of the employe doing the greasing."

After many years of either using anybody who wandered along to do the work, or jobbing out oiling and greasing of their trucks and truck mixers to neighborhood gasoline stations, these Detroit brothers came to the conclusion that the only solution to their greasing problems would be the selection of a trustworthy, intelligent, carefully trained, hardworking employe who was qualified and willing to be responsible for effective, systematic lubrication. At the time of this decision, the Winkworth firm, in the operation of 15 truck mixers, was laying out money for approximately 10 universals every month. All along the line, "parts" bills were running abnormally high. Downtime, regardless

of equipment age, was a most aggravating problem. The question of delivery service had become a serious matter.

A careful choice was made. The selected employe knew trucks. He was hard working and conscientious. Together with the operations manager. the new "greaser" began to work out lubricating routines. Plans were made for the daily greasing of so many trucks and mixers. It was agreed that certain checks should be regularly made. As time passed, the "greaser" developed a regular checking program. The appearance and general condition of each piece of equipment were noted. Transmissions and differentials were watched. Truck frames were studied for cracks. Other pertinent observations were listed. A record-keeping system was set up. Changes began to develop. Universal failures fell to under 10 per year. The "parts" bill was eliminated as a major worry. Downtime decreased and service improved.

It is a comparatively easy matter to obtain from any oil company a suggested use of products that will adequately lubricate the moving parts of all pieces of equipment used in a ready-mixed concrete operation. On information given by the oil company's service engineer, effective lubricating routines can be promptly planned. The hard part comes in trying to make a good program work. The man or men given the responsibility for carrying out the program must be conscientious to the "n th." degree. Unless lubricating personnel have such an attitude, no preventive maintenance program will be successful.

It is also important that quality oils and greases be purchased and modern equipment be provided. Lubricating instructions for trucks, mixers and other equipment should be made available. A regular lubrication schedule should be set up and supervised to see that it is followed. A record system including an index card for every piece of equipment should be used by the supervisor and other maintenance employes. Some form of a "tickler" system should warn employes when a unit is to be serviced.

It is up to the ready-mixed concrete

operator to provide the types and qualities of lubricants required to do the job. He should select oils and greases that assure the best service performance. By using multi-functional oils and greases, a producer can get the maximum in trouble-free performance with a minimum of lubrication equipment and lubricants. Visits to a number of garages operated by ready-mixed concrete producers indicate that too many oils and greases are being indiscriminately used in the lubricating program and that available lubricants are not being properly protected. Knowing the characteristics and potential application of his products, a competent lubrication engineer can provide a reduced number of oils and greases that will adequately protect all equipment.

Don't try to give every oil salesman an order. Buy the best and buy only what you need. Through careful selection, you can cut down oil and grease requirements for delivery equipment, to three or four products. An engine oil is needed that will maintain a clean engine, cut down oil consumption, reduce parts replacement costs and extend periods between overhauls. An oil is wanted that will resist sludge formation, reduce ring and valve sticking, prevent piston lacquering and tend to overcome port clogging.

Truck engines, used in city work, are frequently subjected to what is generally termed "low temperature sludge." Because of the great amount of "stop and go" driving, short runs and idling, inherent in ready-mixed concrete deliveries, units used in the industry are No. 1 victims of this engine malady. It has been completely established that motor oils of high detergency reduce the formation of low temperature engine deposits and oil ring plugging as well as internal corrosion and low temperature wear. Premium and heavy duty oils of high detergency should be used in the crankcases of both truck and mixer engines. For efficient operation of equipment, used in our type of deliveries, it is also important to have frequent changes of crankcase oil accompanied by service of the oil filters.

When the crankcase oil is drained

(Continued on page 170)



Officers of the National Roady-Mixed Concrete Association, Left to right: M. Eugene Sundt, Albuquerque, N. Mex., secretary-treasurer; John W. Roberts, Richmond, Va., vice-president; Robt. Mitchell, Los Angeles, Calif., vice-president; and Louis C. Schilling, Miami, Fla., president

 National Ready Mixed Concrete Association convention program stresses importance of delivering product of uniform quality. Adequate service requires well-trained sales, plant and driver employes

## Ready Mix Producers Analyze Problems In Customer Relations

THE SILVER ANNIVERSARY meeting of the National Ready Mixed Concrete Association, held simultaneously with the 39th annual meeting of the National Sand and Gravel Association, January 9-13, at Miami, Fla., featured three separate sessions and four joint sessions with the N.S.G.A.

Many of the reports, papers and discussions on subjects pertaining to both industries are reported in coverage of the N.S.G.A. meeting presented separately in this issue of ROCK PRODUCTS. This report is of subjects pertaining specifically to ready-mixed concrete.

### **Silver Anniversary Banquet**

The Silver Anniversary Dinner Commemorating the 25th year of the National Ready Mixed Concrete Association was a gala event presided over by past president William Moore. Seated at the head table were all the past presidents and their wives, except for two who have passed away and a third who could not be present, honorary members Stephen Stepanian and Nathan C. Rockwood, and the present officers with their wives. Each was introduced by Mr. Moore who elaborated on their outstanding contributions to the industry. First president Joseph E. Burke (1930-1931) spoke briefly.

A handsome brochure was handed out as a souvenir which detailed the organization of the association and highlighted outstanding landmarks in the growth of the association. It included photographs of all past presidents as well as the present officers, and contained a brief biographical sketch of each.

#### Officers

Louis C. Schilling, I. E. Schilling Co., Miami, Fla., was elected president of the National Ready Mixed Concrete Association. Vice-presidents elected were Robert Mitchell, Consolidated Rock Products Co., Los Angeles, Calif., and John W. Roberts, Southern Materials Co., Inc., Richmond, Va. M. Eugene Sundt, Albuquerque Gravel Products Co., Albuquerque, N. M., was elected treasurer of the association.

Elected to the executive committee were directors Henry J. Brown, The Cook & Brown Lime Co., Oshkosh, Wis.; John B. Donovan, Valentine Concrete Co., Inc., Springfield, Mass.; F. E. Schouweiler, Old Fort Supply Co., Fort Wayne, Ind.; and Murray S. Simpson, Super Concrete Corp., Washington, D. C.

Elected to the board of directors were W. W. Duncan, Clark Concrete, Inc., Baltimore, Md.; George W. Garrett, Stewart Sand & Material Co., Kansas City, Mo.; Robert J. Hummel, Consumers Co., Chicago, Ill.; Frank Penepacker, Readymix Concrete Co., Portland, Ore.; H. Irving Rhine, Bode Gravel Co., San Francisco, Calif.; R. E. Sallee, South Texas Materials Co., Corpus Christi, Texas; F. E. Schouweiler, Old Fort Supply Co., Fort Wayne, Ind.; and Harold E. Shelby, Concrete Supply Co., Charlotte, N. C. (1956); Ralph H. Anderson, Ander-

son Concrete Corp., Columbus, Ohio; Henry J. Brown, The Cook & Brown Lime Co., Oshkosh, Wis.; W. H. Day, Jackson Ready-Mix Concrete, Jackson, Miss.; John B. Donovan, Valentine Concrete Co., Inc., Springfield, Mass.; Alvin N. Kelso, W. A. Kelso Building Material Co., Inc., Galveston, Texas; Noel J. Redmond, Blue Diamond Corp., Ltd., Los Angeles, Calif.; Murray S. Simpson, Super Concrete Corp., Washington, D. C.; and Francis R. Smith, Ready-Mix Concrete Co., Reno, Nev. (1957); and Joseph A. Bullen, The Fountain Sand & Gravel Co., Pueblo, Colo.; Stanley S. Ernst, Ernst Fuel and Supply Co., East Detroit, Mich.; James R. Farrington, Ready Mixed Concrete Co., Annandale, N. J.; Bert W. Mill-



Louis C. Schilling, newly elected president of N.R.C.A., left, talking to A. W. Herdwicke, Concreto Redimix Do Rio de Janeiro, Rio de Janerio, Brazil

ing, Underwood Builders Supply Co., Mobile, Ala.; J. A. Nicholson, Nicholson Concrete Co., Toledo, Ohio; E. J. Nunan, The Buffalo Slag Co., Inc., Buffalo, N. Y.; Raymond F. Powell, Concrete Inc., St. Louis, Mo.; and Eric C. Ryberg, Jr., Utah Sand & Gravel Products Corp., Salt Lake City, Utah, (1958). Honorary members are Nathan C. Rockwood, Naperville, Ill., and Stephen Stepanian, Columbus, Ohio.

A. C. Thomas, The Jaeger Machine Co., Columbus, Ohio, was elected chairman of the Truck Mixer Manufacturers Bureau.

The members also considered at the convention a proposed amendment to the Constitution (see Executive Letter 875 of November 5, 1954) which, if adopted, will limit the terms of Directors-at-large to three consecutive years beginning in 1955, with a one-year period of ineligibility for reelection to serve as a member-at-large.

### President's Address

ROBT. C. COLLINS, president of the National Ready Mixed Concrete Association, opened the first session of the annual convention at Miami, Fla., with his very stimulating address. He paid a tribute to Vince Ahearn. executive secretary, and Stanton Walker, director of engineering, and the entire staff for their very helpful cooperation. Mr. Collins said that there had been an increase of 46 active and nine associate members during the year, making a new high of 640 active and 98 associate members. He said that the financial status of the association was sound, the employe retirement program properly financed, and the insurance program for members was making progress. He reported that ready-mixed concrete had finally been exempted from re-negotiation and that much of the credit for the success in granting the exemption should be given to Bud Spratlen of Denver, Colo.

During 1954, pointed out Mr. Collins, nearly 66 million cubic yards of ready-mixed concrete had been sold with a market value of approximately \$790,000,000, and required 90 million barrels of cement which is a record. However, the business was spotty with some areas very busy and others very slow. Competition was keen, and prices declined in spite of stable or increased labor and material costs. Construction volume established an all-time high.

The splendid cooperation of the Portland Cement Association was referred to by M. Collins in preparing the sound and color film, "Quality Ready Mixed Concrete," which was shown later in the program. He also referred to the "Promotion Aids" which were later described by Mr. Westby of



Robt. C. Cellins, president of N.R.M.C.A., to the left, and Louis C. Schilling, presidentelect, to the right, admiring the new Texas hat presented to Col. H. E. Peirce, convention speaker and chairman, Ballast, Sand and Allied Trades Association of Great Britain

PCA. Thanks were also expressed to Chairman Bob Smith of the Truck Mixer Manufacturers Bureau for the fine cooperation of the Bureau.

Mr. Collins said that he had only been able to attend three regional association meetings, but was gratified with the well-prepared programs and the attendance.

Mr. Collins pointed to the problem of educating the new ready-mixed concrete producer to maintain quality standards. One of the most important association projects, he said, would be to find some method of licensing ready-mixed concrete producers in order to assure that quality standards are maintained. Equipment manufacturers also have a responsibility in seeing that quality standards are maintained, said Mr. Collins. If readymixed concrete is not permitted to be used because of failure to adhere to specifications, the manufacturer may be faced with a surplus of used but unpaid for equipment. In closing, Mr. Collins referred to a recent advertisement of the Saturday Evening Post titled, "How to be a Successful Advertiser" which listed seven steps which



Robt. C. Collins, retiring president of N.R.M.C.A., presenting Pit & Quarry Class A safety trophy to Jehn T. Geither, Certified Concrete, Inc., East Chicago, Ind.

should be followed: (1) make a quality product; (2) constantly strive to maintain or improve that quality; (3) price it at its true value; (4) make it readily available; (5) advertise truthfully and in good taste; (6) advertise consistently; (7) advertise to the right people. Mr. Collins said that if it had been written for the use of the readymixed concrete industry, he would not change a word of it.

### Safety Awards

Following the election of new officers of the National Ready Mixed Concrete Association, reported elsewhere in this issue, the presentation of the Pit and Quarry safety award plaques was made.

The class A award, for companies operating during the contest period from July 1, 1953 to June 30, 1954, producing more than 100,000 cu. yd. of concrete, went to Certified Concrete, Inc., East Chicago, Ind. This company operated the full year without a single accident. John T. Gaither, president of the company, in accepting the award, said that the company's interest in safety had played an important part in the improvement of sales, service, public relations and fabor relations. As operations are in a heavy industry area, insurance requirements are high; collision coverage on trucks and cars allows \$100,000 per person with a maximum of \$300,000 per accident, and property damage is \$100,-000 with a maximum of \$300,000 per accident. He said that insurance companies have cooperated in supplying safety literature which is posted on bulletin boards in the garage, clock house and yard office. Insurance companies also have representatives speak at employe safety meetings, showing slides and movies on the prevention of accidents. All new drivers must pass a driver's test conducted by the garage

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superintendent. Emphasis is placed on clean equipment to promote safety, and regular checks are made of cabs, headlights, tail lights, controls and the inside of mixers. The company insists that drivers comply with all speed laws. Mechanics are employed for checking and maintenance during the day, and a night crew checks trucks when they are not in operation. Drivers must report in writing anything that they think might be wrong with the truck, especially brakes, steering gear and lights. These repairs are made at night; the mechanic signs the report which is turned over to the garage superintendent to be checked and filed for reference. Mr. Gaither said the association Certificates of Accomplishment presented to the men have been very well received by employes, and are considered an excellent reference should they be seeking employment elsewhere. Insurance companies also present safety buttons to employes for accident free periods.

President Collins pointed out that less that 50 percent of the members participate in the contest, and he urged others to enter it.

The Morse Sand and Gravel Co., Inc., Pawtucket, R. I. was awarded the class B plaque for operation without an accident among companies producing 50,000 to 100,000 cu. yd. of concrete. Alfred H. Morse, president of the company, in receiving his company's award said that in addition to the responsibility which the company owes to the public for the preservation of life, limb and property, there are some tangible benefits to the company in a reduction in insurance rates, a reduction in loss of working hours, and the worker is playing a major role in helping to increase efficiency. Mr. Morse stressed the responsibility of management in fostering the program and in developing a high degree of safety consciousness among employes. Employes, he said, should be encouraged to offer safety suggestions.

Gerlach Builders Supply, Inc., Topeka, Kan., was awarded the Class C plaque for operation without an accident among companies producing less than 50,000 cu. yd. of concrete. H. W. Gerlach, president of the company, in accepting the award said that a safety program is like measels in third grade - it is infectious. Workmen, he said, deserve commendation for good safety records and vigilance. He said that there is no inherent advantage in being a small or large operation as the basic problem is the same. It is highly important that management be alert to its responsibilities in detecting accident hazards and correcting them. His company uses large lettered signs at places where employes



H. W. Gerlach, Gerlach Builders Supply, Inc., Topeka, Kan., who received Class C safety trophy

are sure to see them. Drivers also are held liable for traffic fines. Mr. Gerlach said that one of the difficult problems is the contractor who asks drivers to enter hazardous situations. The accident-prone employe, said Mr. Gerlach, must be eliminated from the payroll if a good safety record is to be achieved.

In concluding the presentation of awards, President Collins said that a new classification had been set up for companies producing 25,000 cu. yd. or less.

### **Quality Concrete**

The ready-mixed concrete industry was both criticized constructively and offered some suggestions on how it might improve its product and the conduct of its business in a vary frank talk, entitled "Ready Mixed Concrete as Viewed by a Consulting Engineer" presented by Miles N. Clair of The Thompson and Lichtner Co., Boston,

The engineer is not concerned where the contractor gets the concrete but he checks the concrete for quality and its compliance with specifications and he is concerned with variations in quality. Mr. Clair said that engineers are disappointed because variations in compressive strength in the magnitude of 25 percent are still being obtained with ready-mixed concrete. He believes that variations should not exceed ± 15 percent.

He believes that better specifications are needed as written by engineers and that the ready-mixed concrete industry must play a larger part in educating engineers and architects to use the best specifications for given purposes. Better control of uniformity in ready-mixed concrete plants is sorely needed in Mr. Clair's opinion. Even though all concrete passes the specifications, he emphasized that engineers still want such concrete to be uniform in quality.

It is recognized that there are variations in aggregates over the country and therefore that one specification cannot apply universally but, said Mr. Clair, it is essential to have control over the uniformity of a given aggregate. The same goes for portland cement, and it may be desirable to maintain large storages in order to make it possible to accomplish the objective.

Speaking on the subject of concrete testing laboratories, of which there are now more than 250 outside of highway laboratories, he thinks the ready-mixed concrete industry should not be required or allowed to pay charges for testing its product. He believes the practice to be unethical and that education is necessary to overcome the situation so that the owner will employ agencies to protect his interests and not pass that cost on to the producer.

Closer cooperation between contractor and producer is also needed, he said, in order to expedite operations so that mixers will not be held for highly variable periods at the jobsite. Concrete is often seriously damaged as a result, he said, and there is much unnecessary penalty in costs.

Mr. Clair also believes that conveying and mixing equipment can be improved in order to upgrade quality of concrete. He has observed non-uniformity in the discharge from truck mixers and believes that more development in equipment is needed toward obtaining more uniformity from one end to the other of the mixer. He also suggested the possibility of developing insulated truck mixers.

A definite control program for quality and uniformity is needed through-



Alfred H. Morse, Morse Sand and Gravel Co., Pawtucket, R. I., holding Class B safety traphy

out the industry in his opinion. Smaller plants must have some checks, he said, and the larger ones need more technical supervision.

### **Ready-Mix Specifications**

STANTON WALKER presented a brief but very instructive paper on "Specification Bases for Acceptance of Ready-Mixed Concrete." Referring to the three types of specification now in general use, he repeated the classifications already given by Fred Bartel: (1) Prescription (proportions and characteristics of the concrete); (2) strength- and other characteristics as for example slump, maximum size of aggregate; (3) the "double- or triplebarreled" kind, where minimum cement factor, water cement ratio, etc. are specified along with strength requirements.

Because the purchaser usually can't go to the trouble and expense of supervising the batching and mixing, the strength test is about the only one that can be readily used; hence, whether producers like it or not they will nearly always be called upon for concrete of given strength, even though the strength test may not be in the specification. If the strength test falls below what the purchaser thinks it should be, or for which he designed his mix, he thinks the producer is at

fault, regardless.

However, Mr. Walker pointed out, a specification based on strength, implied or otherwise, which does not provide for the practical certainty that there will be a reasonable number of defective test results is "economic dynamite." He then elaborated, as he has done on many other occasions, before representative purchasers as well as producers, on the difficulty in getting test samples of ready-mixed concrete on the job that are truly representative of the actual quality of the concrete. How the sample is taken, who takes it, where it is molded, where and how the specimen is stored preliminary to removal to the testing laboratory, the temperature where the specimen may be in the meantime, how the specimen is capped in the laboratory, and other factors, all unrelated to the ingredients in the concrete are very important factors in the strengths developed in the testing.

Mr. Walker said A.S.T.M. specification C-94 had tried to recognize some of these variables. Quoting from

his paper:

"First of all, the importance of securing a representative sample is recognized by requiring that the sample consist of three or more parts taken at regular intervals throughout the discharge of the entire batch, except, it is warned, that samples shall not be taken at the beginning or end of discharge. Incidentally, such a procedure (i.e., from three or more parts at regular intervals throughout discharge) may be, quite frequently, completely impracticable. Then it is required that the sample be transported to the place where the test specimens are to be molded and that it shall be remixed with a shovel the minimum amount of time to insure uniformity. All of this is quite laborious and, because of that, the rules are probably neglected more often than they are followed.

"Further recognition of the lack of reliability of strength tests is given by the requirement that three standard test specimens be molded from the composite sample with all of them being tested at the same specified age and the average of the three considered as a single test. The influence of defective specimens and the propriety

of discarding them is discussed. The requirement for three test specimens, makes testing expensive and, here again, the letter of the law is infreuently followed. And, finally, it is provided that there is compliance if the average of all tests and of any five consecutive tests is equal to or greater than the specified strength and if no strength test is less than 80 percent of specified strength.

"That may sound like a quite liberal specification, but in order to have 99 in a 100 chances that a test will not fall below this 80 percent requires a 4 percent over-design for the most favorable operation and a 15 to 20 percent over-design for the average

operation."

Mr. Walker then explained in more detail how the limits of normal variation in strength tests are arrived at. (For the technical papers, see page 89.)

### Merchandising-Customer Relations

S. H. Westby, manager, Housing & Cement Products Bureau, Portland Cement Association, presented an interesting review of the work of the Promotion Committee in developing promotion aids which were combined into a "package" set for convenient reference by ready-mixed concrete producers. Mr. Westby illustrated his talk by showing slides of the various promotion pieces, including direct mail, gummed stickers, farm market material, envelope stuffers, basement suggestions, radio and TV spot announcements, newspaper advertisements, etc.

In the absence of Mr. Corning, director of promotion, PCA, Mr. West-by introduced the premiere showing of the very excellent sound and color film, "Quality Ready Mixed Concrete." This picture emphasized the importance of seeing that concrete would not be abused on the job by improper placing and curing. Mr. Corning's introduction also referred to the courses of instruction promoted by P.C.A. The National Ready Mixed Concrete Association has purchased 20 copies of the film.

### **Panel Discussion**

A panel discussion of merchandising practices was led by the following: Harold E. Shelby, Concrete Supply Co., Charlotte, N. C.; Robert J. Hummel, Consumers Co., Chicago, Ill.; John B. Donovan, Valentine Concrete Co., Springfield, Mass.; and M. Eugene Sundt, Albuquerque Gravel Products Co., Albuquerque, N. M.

Mr. Shelby, in his prepared discussion, emphasized the point that it is not only necessary to produce quality concrete but the producer must see that it is properly placed and cured. The producer must control all the variables; such as, aggregate gradation, moisture content, temperature, and adjustments to weather conditions and delivery time. Records must show all details of production, including proportioning, mixing and delivery.

### Service

Mr. Hummel said that advertising costs for his company in 1954 were less than 1.5 mills per sales dollar, including all advertising copy, telephone red book displays, "give aways," sign painting and other incidentals. He pointed out that a few years ago the advertising budget ranged between 3 and 5 percent of the sales dollar, but in those days the company handled building material, coal, ice and fuel oil, sold direct to the consumer. Mr. Hummel said that if the public was sold a yard of ready-mixed concrete, a load of sand or crushed stone or a sack of cement, his company undoubtedly would resort to advertising to reach this type of buyer. However, he pointed out that only 2 percent of the Consumer Co. dollar sales of ready-mixed concrete goes to the home owner. Other large companies in the Chicago area have a similar record. Smaller producers in the area make a special effort to obtain home owner business and these companies do advertise.

Home owner business is desirable, said Mr. Hummel, as it brings higher prices, but it has more headaches because of the trouble of delivering concrete to an individual who knows little about handling it and delivery schedules are disrupted by delays. The company depends almost entirely on contractors for business, and the sales department does not believe contractors are sold by advertising.

Mr. Hummel said that his company does not sell on price but on quality. In Chicago, concrete is sold by cement content instead of by strength. In addition to the correct cement content, every effort is made to see that coarse and fine aggregates are as good as can be found and that they are properly proportioned. Slump requirements are carefully watched, and when signed tickets show that a customer is adding too much water an effort is made to show him the error of his way.

Mr. Hummel was optimistic about the future of ready-mixed concrete in the Chicago area with the Indiana toll roads plus increased highway construction in Illinois. Possible cement shortages are expected in 1955. When the company got into the ready-mixed concrete business, it did not anticipate any large volume of pavement work. For many years this work had been supplied by dry batching. Curbs and gutters, intersections, pavements under overhead structures and similar work had resulted in ready-mixed concrete orders. However, in November, 1954 a paving contractor who was required to finish his paving contract in 1954 completed his contract in time by taking 1070 cu. yd. of ready-mixed concrete per day. Other contractors have become interested in the timesaving feature of ready-mixed concrete, and more orders of this type are anticipated.

### **Big Volume-Small Profit Margin**

John B. Donovan, Valentine Concrete Co., Springfield, Mass., touched upon the problem of making a profit under the handicap of cement shortages. In his area, Mr. Donovan reported that ready-mixed concrete companies enjoyed a good volume of business, but a long cement strike and subsequent shortage cut profit margins as many companies paid from 96 cents to \$1.56 per bbl. over normal costs because cement had to be obtained from sources at considerable distance from the area. He predicted that 1955 volume would be equally favorable and everyone would have all the business that could be handled.

Turning to the future, Mr. Donovan said that the ready-mixed concrete industry should consider the great changes that had occurred in such basic industries as railroads, coal, and textiles. If the industry keeps abreast of progress that is being made, such as prestressing and the increasing use of lightweight aggregates, it



Louis C. Schilling, left, newly elected president of N.R.M.C.A. taking over gavel from Robt. Collins, retiring president

will continue to be in the concrete business for many years.

### **Quality Control**

Eugene Sundt, vice-president, Albuquerque Gravel Products Co., Albuquerque. N. M., in his very interesting discussion on merchandising problems outlined some of the tools for better service available to producers. He pointed out that "good service will sell more concrete than all the advertising we could afford to buy." He said that his company had hired one more dispatcher than needed so that each man could have one week each month in the field visiting the jobs. It was felt that the men at the desk would appreciate the problems in the field and thereby improve their judgment. Another aid to good service is the two-way radio units installed in each of the company's mixer trucks and in the cars of service men.

Another tool for better service is reliable equipment kept attractively painted and well-maintained, said Mr. Sundt. A preventive maintenance program has been set up which requires that each truck get an inspection and check-up every 150 hr. of operation. As time progresses these check-ups become more comprehensive, and at the end of 1800 hr. both the truck and the mixer are completely torn down, rebuilt and painted. Salesmen, he said. played a key role in trying to give service as they have the job of investigating all complaints. Drivers use the radio to advise the dispatcher if a customer seems to be dissatisfied, and he in turn will contact the salesman to investigate the complaint. Regular monthly employe meetings are held to discuss safety, courtesy and customer relations. Refreshments are provided after the meetings and the social contact is a help in building good employer-employe relations.

On the problem of quality concrete, Mr. Sundt raised the question of lack of uniformity in portland cement. He

said that the contractor is blamed for adding water, the testing laboratory for not properly sampling or testing, and the testing laboratory blames the plant, the mixers or improper grading of sand. The architect or engineer is more inclined to agree with the testing laboratory so specifications for aggregates become tougher, and bins are set aside for government tested cement. As the variations still persist, batching plants are required to have special automatic scales and recording devices to print the weight of cement going into each batch. Even recording devices for aggregate have been added.

Mr. Sundt raised the question as to why there is an apparent lack of control even though every care is exercised in having each ingredient of the mix be uniform and accurately weighed out, including metering of the water and determination of moisture in aggrates. He reported that one laboratory investigation showed that cement from a given mill had a variable water demand or slump producing property which ranged from 38 to 151 percent of the average from that mill. Strength producing properties from a given mill were found to vary from 67 to 118 percent of the average for that mill. Consecutive cars drawn from the same silo were found to have significant differences. Although specifications for aggregates set limits to require uniformity, specifications for portland cement do not require uniformity, said Mr. Sundt, and "no amount of automatic scales, recording devices or silos for government test cement is going to produce uniform cencrete unless we have a uniform cement."

### Discussion

A lively discussion followed the prepared panel discussion of merchandising practices in which questions were addressed to members of the panel. To Mr. Hummel the question was asked on what basis was the concrete sold. He said that the price was based on the cement content, and that the 5-bag mix was standard. If the customer requested a certain strength requirement, the company would make a recommendation. Mr. Hummel was also asked about charges for waiting time. He said that a charge was made for waiting time beyond the allotted time for making delivery, and the charge was shown on the bill. Contractors also were credited for short time delivery and the time was averaged out. In Los Angeles, Quentin Best said that 5 min. per cu. yd. were allowed for waiting time. He suggested that contractors should indicate number of cubic yards per hour so that delays would be reduced to a mini-

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# Wisconsin Producers Urged To Hold Prices and Do More Advertising

WISCONSIN CONCRETE BLOCK MANU-FACTURERS gave away more than \$400,000 in price cuts they could ill afford last year, retiring President Frederick Yahr of West Bend told members of the Wisconsin Concrete Products Association in Milwaukee, Jan. 12. He contrasted this with the fact that in the same period, the Association members fell short of raising a \$10,000 budget for advertising.

"I don't believe they could afford to give the \$400,000 away," Mr. Yahr said, "but how could they afford not to spend \$10,000 on advertising and promotion?" Mr. Yahr arrived at the \$400,000 figure by assuming a cut of 2 cents per block on 20 million block which he called "a very conservative portion of the annual 80 million state production." He was speaking at the opening session of the thirty-fifth annual convention of the products association held in the Plankinton Hotel, Jan. 12 and 13. About 150 members, associate members and guests attended.

### **Promotion and Advertising**

The program included a talk on "Promotion and Advertising," as applied to the block business in Wisconsin by Ray Minette of Milwaukee, chairman of the association's Promo-tion Committee. Other important features of the two-day business sessions were addresses by three guest speakers; Jesse H. Besser of the Besser Manufacturing Co., Alpena, Mich.; Earl Peterson, of the Ideal Cement Stone Co., Omaha, Neb. and C. A. Sirrine, executive secretary of the Michigan Concrete Products Association, Detroit.

Mr. Besser spoke on "The Concrete Block and What is Necessary for Still Greater Acceptance of this Excellent Building Material." Mr. Peterson dis-cussed "The Value of An Association in Times of Keen Competition." Mr. Sirrine spoke on "Benefits of Control Joints and Wall Reinforcing," illustrating his remarks with slides showing construction details and actual photographs of concrete block walls with and without control joints in a number of building projects.

### **New Officers Elected**

Loyal A. Clark, Wausau Concrete Products Co., was elected president for 1955. Other newly elected officers are: first vice-president, Carl R.

Thompson, Thompson Concrete Products Co., Kenosha; second vice-president, Cecil Hemstock, Hemstock Bros. Concrete Products Co., Sparta; secretary, Edwin B. Bartlett, Jr., Best Block Co., Milwaukee, and treasurer, William R. Menard, Economy Block Co., Wauwatosa. Additions to the board of directors are: Ray Minette, Milwaukee, Eugene Kliest, Eau Claire and Cecil Hemstock, Sparta.

In leading up to his incisive remarks on price cutting, retiring President Yahr referred to the trend toward plant modernization and the building of attractive office buildings and display rooms for the concrete products

plants.

In discussing reasons why it was difficult to raise money for Association advertising, Mr. Yahr said: "Of course we find a lot of opposition when we try to raise these funds. And why? What are the excuses? Well, they may explain that with today's prices they are hard pressed to find those extra dollars, or they may claim that they are not getting their proportionate share of the benefits. Let's look into these excuses a little farther.

"First, we have the matter of finding the necessary money requested by the Association. We have completed, in the year of 1954, another banner period of construction. A banner year in construction has meant in the past years a record number of block sales. There are, however, rumors floating around that although records in block sales are being made, records in profits from sale of those block are not the case. It may even be the case with some of us that more block sales have resulted in less profit. Why? Because in some instances block are selling for

less than they were a year or two ago . . . But were we making too much money on our product before? I dont believe we were. Any person, or any company, making an investment, makes it with the hope that a dividend will be received . . . The concrete products manufacturer of today has a sizeable investment in plant and equipment. They deserve a fair return. Maybe some operators are not getting that fair return. Why then are block in some instances selling for less money today than they were a year or two ago, when yesteryear's price would be yielding a fair return were they in effect today?

"It is because in a moment of weakness some of us cut prices because block began to accumulate in our yard during a season when construction was at its slow period? To most of us a stock of block in our yard was an unfamiliar sight in the years since the war, but we should not lose sight of the fact that aged block make better buildings than the green ones which we have delivered so freely in the past ten years. In fact it would be better for the consumer as well as ourselves to let these block age rather than go out and try to sell them at reduced prices."

### **House Design Competition**

Ray Minette, chairman of the Association's promotion committee, began his discussion of promotion and advertising with the comment: "What a job we could do with the \$400,000 President Yahr says we have given away." Mr. Minette described the design competition for fire-safe concrete masonry homes conducted in 1954 by

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Left: Percentages of 20-cent selling price of block applied to various elements of cost. Right: Showing how the 20-cent selling price of a block is divided into costs and profit

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# Bantam - MOST VERSATILE MACHINE YOU CAN OWN



### PARTIAL LIST OF SATISFIED OWNERS

B. Broth & Son, Great Salle, Montens
 U. S. Phosphorio Products, Temps,
Floricia Mission Paving Company,
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Company, Kunice, Louisiesse & Weeks
Asphalt Paving Company, W. Collingwood Hote, New Jersey • Haley Gravel
Company, Lensing, Michigan • Stolley
Sand & Gravel Company, Spencer, Jowa

« Klumpp Brothers Gravel Company, Chelese, Michigan • Bright,
Sand & Gravel Company, Spencer, Jowa

« Klumpp Brothers Gravel Company,
Chelese, Michigan • Bempson Ceal
Mine, Fayette, North Dakots • Botchot
Concrete Works, Jacksonville, Florida

• Jacksonville Send Company, Lesksonville, Florida • Florida Aphalt Paving
Company, Panessa City, Florida • Weetsers New York Gravel & Conpense Corp.,
Betavia, New York • Oceanetde, Sand

& Rock, Oceanetde, California • A & W
Gravel Company, Waverty, Jowe • Hillstep Send & Gravel Company, Deyton,
Ohto • Brooks Pavin Company, Missal,
Florida • Denham Gravel Company,
Clarkaville, Miss • Spring Lake Sand &
Gravel, Manito, Illinois • Weet Texas
Concrete Compeny, Odesea, Teass •
Alabama

Thousands of satisfied owners, including those listed at left, are making their equipment dollars go farther with a Bantam. Here's why. One Bantam, with 9 fast-change attachments, handles all these jobs:

FEEDING CRUSHERS • REPLACING GIN-POLE STONE HANDLING
• HANDLING SIDE BANK DIGGING
• STOCK PILING MATERIALS
• LOADING & UNLOADING RAILROAD CARS • FEEDING READYMIX BATCHERS • LOADING OUT
BAND AND AGGREGATE • ROAD
BUILDING, GRADE CONSTRUCTION • EXCAVATING SMALL
ROADSIDE PITS • MISCELLANEOUS CLEARING & GRADING

Low initial cost . . . low operating cost . . . low upkeep and repair . . . that's the economy of owning a Bantam! There's a Bantam mounting that will fit your needs EXACTLY. Bantam mounts on Crawler . . . Crane Carrier . . . Remanufactured truck . . . or on your own truck.

WRITE FOR COMPLETE INFORMATION, SPECIFICATIONS AND PRICES AND FOR THE NAME OF YOUR NEAREST SCHIELD BANTAM DEALER. ACT NOW!



World's Largest Producer of Truck-Cranes & Excavators

the Wisconsin Concrete Products Association with the sponsorship of the Wisconsin Architects Association.

### **Data Book Planned**

A dummy of a comprehensive concrete masonry data book to be published during 1955 was displayed by Mr. Minette. He said that this is to contain the prize winning house designs from the Wisconsin competition and also the winning designs from competitions held by the state associations in Michigan and Nebraska.

### Recalls Year 1906

Mr. Besser, the last speaker on the program for the first day, harked back to the year 1906 when he said the first national concrete machinery show was held in Milwaukee. He referred to "the long and helpful service" of the Wisconsin Concrete Products Association which he said "far outranks other states." Again going back to the year 1906, Mr. Besser said: "At that time concrete block were made by hand tamping, and three men, doing all the work, produced 200 block per day. Now, in 1955, we also have three men but they produce 8000 block per day and it is easier to make and sell the 8000 block per day than it was the 200 per day in 1906."

The speaker referred to the forecast which he said had been made by John Strandberg of Kansas City and others, of a six billion annual production of block in a few years. "Perhaps the best way to consider the further advancement of this industry is to tie in with this forecast of increased production," he said.

"Let us consider some of the points which are involved in jumping from two billion up to six billion block per year and also improving the industry and the product in other ways." He listed these main points:

"All block for exterior use must be dense and watertight and of such shape as to produce a watertight wall without painting or treatment.

"The cracking of concrete block walls, both exterior and interior must be stopped," he declared as his second point to which he gave emphasis.

"All block plants," he said, "need a rigid and constant control of the manufacturing process from selection, grading, proportioning and mixing of the aggregate on through to the forming and curing of the block.

"We need a better understanding of the various uses for block and more attention to furnishing proper block for the different uses," he declared. He urged selection and buying of block by the architect and owner. "Buying by the contractor," he said, "produces



Three simultaneous placing methods...by crane and bucket, direct pouring and 60' chutes.

# 635 yds. in 61/2 hours with 15 mile haul

## Medium size plant does big job with Jaegers

Here's what a good operator can do with dependable truck mixers, even after some of them are 10 to 12 years old.

The contract, 10,000 ca. yds. of concrete for the Columbus & Southern Ohio Electric Co.'s Picway Powerhouse addition, included 8 monolithic foundation mats 4'6" thick, for heavy generating equipment. The largest of these reinforced concrete mats, measuring 56'10\delta' x 66'9", called for a continuous one-day pour of 635 ca. yds.

To meet this schedule, Arrow Sand & Gravel Co., with its ready-mix hauler, the Anderson Haulage Co., needed every mixer in its Jaeger fleet, plus 4 additional Jaegers supplied by the Columbus Ready-Mix Corp. Ten of these mixers were little 3 yd. units and 18 were 4½ yd. size.

They batched these 28 mixers at 3 different plants located 13, 15 and 16 miles from the job. On the site they had 6 places at which to unload. The concrete averaged 4½" slump. It was placed by several methods simultaneously and then vibrated in the forms.

The first truck started at 7:40 a.m. At 2:10 p.m. the last of the 635 yds. had been poured — an average of 98 yds. an hour without a hitch.

The Jaeger mixers used on this job ranged from 1 to 12 years old. There are good construction reasons for this long, dependable service. Ask your Jaeger distributor, or write for catalog.

60' chutes were needed to reach forms.



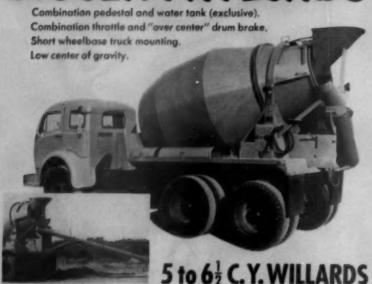
### THE JAEGER MACHINE COMPANY

603 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS . PUMPS . LOADERS . CONCRETE MIXERS . PAVING MACHINES

### BETTER WEIGHT DISTRIBUTION MEANS

# BIGGER PAYLOADS



### OTHER FEATURES

- · Heavy duty construction yet lightweight.
- · Ratchet controlled chute 7' 6" with two 4-foot extensions; hydraulic control available.
- . Chain drive take-up by hinged reduction box.
- · Repair parts are standardavailable locally.

STUDY THESE FEATURES and you will see why the new Willards offer bigger legal payloads, faster operation and lower maintenance costs. Only Willard offers combination water tank and pedestal and single lever throttle and drum brake control. Every operator will appreciate the combined throttle and "over center" drum brake made possible with the "fluid drive" on Chrysler engine. Willard offers more for your money; get the facts today. Dealers everywhere.

Manufactured in Los Angeles and Galion, Ohio

WILLARD CONCRETE MACHINERY SALES CO. 11700 Wright Road, Lynwood (Los Angeles County). Calif.



## WILLARD TRUCK MIXERS

## COLOR MAKES THE SPLIT BLOCK

USE: PURE-STRONG-CLEAN COLORS

11 REDS-from peach to burgundy

YELLOWS-from lemon to buff

15 BROWNS-from beige to chocolate

PLUS

BLACK - GRAYS - BLUES - ORANGE AND

TWO DISTINCT TYPES OF GREEN

Distribution Points Throughout the Country

FRANK D. DAVIS COMPANY 2704 Santa fe Avenue

Los Angeles SE, California

the twin evils of price cutting and quality cutting."

### **Block Plant Economics**

Earl Peterson's talk on the value of a trade association, opened the second day program, Jan. 13, presided over by the newly elected president. Loyal A. Clark. Mr. Peterson used pie charts on a blackboard to show how a 20 cent selling price for a concrete block is divided. These charts are illustrated, on page 162.

In order to show the relation of profit to plant investment, Mr. Peterson then quoted from a national survey of 100 companies which he said placed the average value of plant investment to be \$14,000 per employe. He suggested assuming an average of 20 plant employes in order to analyze a plant investment.

"Take the figure of \$14,000." Mr. Peterson said, "and multiply it by 20 and it gives a total of \$280,000 as our investment on which we would like to make a fair return. Using the figure first mentioned of a 5 percent net profit, we should be entitled then, after taxes, to a net return of \$14,000. If we have little more efficient operation and can do a little better than the average and squeeze out up to 9 or 10 percent net profit, we would then be realizing from \$28,000 to probably \$30,000 after taxes."

At this point Mr. Peterson quoted from a pamphlet published by the National Association of Aluminum Distributors, entitled, "What It Costs to Slash Prices." The speaker said the pamphlet showed that a 10 per cent price cut requires a 66% per cent increase in volume to bring the same net return as before the price cut; and a 20 per cent price cut calls for a 400 per cent increase in volume to recapture profits on the original basis.

### **Explains Control Joints**

Mr. Sirrine's paper on the benefits of control joints in concrete masonry walls, emphasized the fact that lack of knowledge of concrete masonry materials on the part of designers and potential users is a limiting factor in the use of such materials.

The speaker noted that part of the meeting program was devoted to a discussion of promotion which he said was a term unfortunately subject to many misinterpretations. He said that rarely if ever are the valuable by-products of technical research and field experience given consideration in promotion programs. With specific reference to control joints, he said:

"It is with such a by-product that our present subject matter has to deal. Out our way it has been discovered,

(Continued on page 169)



Rugged Y-260 speeds yard operations at Sherman Concrete Pipe Co., Knoxville, Tenn.

## Sherman Concrete Pipe knows . . . **BIG LOADS MEAN BIG PROFITS**

Concrete pipe with diameters of 7 feet, and weighing 20,000 lbs. is a big load . . . calls for big, rugged equipment. Sherman Concrete found the Clark-Ross Y-260 met the test-released 8 to 10 men for more productive work, speeded operations, increased their profits.

Rugged terrain, mud, bad weather are no problem for the Clark-Ross Y-260. Balanced weight distribution and large sized tires guarantee positive traction. Low center of gravity combined with a high under-clearance of 10" gives exceptional operation on rough terrain. And for maneuverability the Y-260 can't be beat. The shaped rear counterweight of the Y-260 is especially designed to reduce overhang in turning, to give a minimum of tail swing.

Here's a truck that offers outstanding traction and maneuverability . . . with big load capacity. Call your local Clark dealer for details on how the Y-260 can increase profits in your operations. He's listed in the Yellow Pages under, "Trucks, Industrial."



Industrial Truck Division CLARK EQUIPMENT COMPANY Bottle Creek 60, Mich.

# BESSER helps block p



Ask your nearby Besser representative to belp you produce and sell more quality block. No obligation. Write today.

## Company

BOX 135 ALPENA, MICHIGAN, U.S.A. Complete Equipment for Concrete Block Plants

### National Advertising in Architectural and Building Publications Creates Interest in Concrete Masonry...Stimulates the Demand For All Types of Block

Every block maker knows how the Besser Company pioneered perfection in concrete block . . . always striving to help the industry produce better block on a faster, high-production basis. But the Besser Company doesn't only design and build block making equipment. Besser also promotes the sale of block.

In all principal architectural and building papers, Besser advertising is telling the entire industry all the facts about this modern masonry material. Millions of Besser ads are pre-selling the products of VIBRAPAC Block plants throughout the world, thereby boosting the demand for block and increasing sales.

No doubt about it . . . the mounting trend toward VI-BRAPAG Block and BES-STONE Split Block for exteriors and interiors is solidly founded on Besser's continuous promotion, plus highest standards of beauty, permanence and other qualities of VIBRAPAC Block,

### Besser Helps You Produce High-Quality Block - Faster!

A Besser Vibrapac produces three 8" x 8" x 16" modular block at a time on ONE Plain Pallet. Other units, made in equivalent multiples, on the same set of Plain Pallets. Fully automatic. One man removes finished block with power off-bearing hoist, and, with no lost motion, returns empty pallets to the Vibrapac machine,



PROMOTERS OF HIGH QUALITY CONCRETE MASONRY FOR MORE THAN A HALF CENTURY

### **Wisconsin Convention**

(Continued from page 166)

from all the actual field experience we have so far been able to gain, that control joints in concrete masonry walls, where properly designed and properly used, pay handsome dividends in the form of satisfactory concrete masonry construction."

Promoting the use of properly designed and built control joints requires a big educational job, the speaker declared. Part of the resistance to control joints, he said, came from the unfounded fear of architectural designers that such joints would mar the aesthetic quality of a design. He declared it to be the duty of concrete products manufacturers either individually or through their associations to provide the designers with complete and accurate data on control joints.

The speaker said that while some extra cost is involved in building walls with control joints, "experience so far indicates it to be so small as to be negligible." But this extra cost, whatever it may be "will appear insignificant in comparison to the advantages to be gained in the finished structure through the use of adequately designed and properly placed control joints." The design details and construction pictures Mr. Sirrine used on the acreen demonstrated these advantages.

The program closed with the presentation of a symposium illustrating important phases of salesmanship, by three speakers billed as "The Horsemen of Sales." These were, "Demonstrations," by Leslie A. Falk, vice president Wisconsin Coal Co.; "Visual Selling by Al Herr, Herr Advertising Agency and Jim Dornoff, vice president and sales manager, Pate Oil Co.

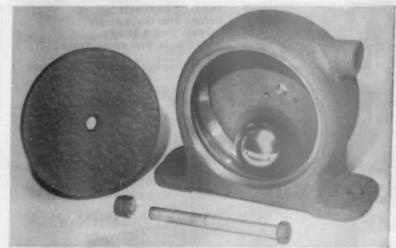
### Ready Mix—Merchandising

(Continued from page 160)

mum. One producer reported one case of a contractor charging the company for waiting time.

Mr. Sundt was asked about attendance of drivers at meetings. He replied that it was not mandatory, and that meetings were held in the evening. Attendance is made as attractive as possible. The company has a safety contest and banquet to which all employes are invited. Mr. Collins of The Warner Co. said they have a regular testing engineer for both aggregates and cement, and mill tests are not accepted.

A considerable discussion followed on the question of whether companies sold by cement content or by strength specification. It developed that both methods are employed, but a large percentage of producers still sold bas-



# New AiroViber Moves Bulk Materials Quickly, Quietly, and Effectively...

AiroViber simple design provides dependable, trouble-free vibration

This new method of external vibration can be used to good advantage in loading, unloading, moving, packaging, processing, grading or separating bulk materials.

The AiroViber is able to deliver effective and dependable vibration with only one moving part, a heavy steel ball running on a circular track. The pounding usually associated with ordinary types of vibration has been eliminated with the special noise lessening design, exclusive with AiroViber.

Simplified Design

AiroViber's one moving part is a steel ball. An air jet blows it at high speed around a ground and hardened steel track in the housing. The weight of the ball develops a strong centrifugal force, which the vibrator transmits through its mounting into the object to be vibrated. It will start and operate under any condition and performs at high or low temperatures. AiroViber is not affected by humidity.

**Trouble-Free Operation** 

The AiroViber is almost fool proof in operation. Because it has no close fitting parts to lubricate or adjust, it will start every time you open the air valve. You can install it in hard to get at locations with full confidence that it will operate without lubrication or maintenance for a long time.

### No Installation Problems

AiroViber is easy to install. It does not need any special line oilers or air filters. Merely hook up an air hose large enough to deliver the air specified for the unit you select.



AlreVibor rotory vibration breaks up orthing and jamming in bins, hoppers, chutes, fooders, and other places where bulk materials hang up. It is also recommended for vibrating tables are platforms, sorting and many other applications,

AiroViber is a product of Viber Company, leader in the field of vibration. For further information, write: Viber Company, Dept. CO 71, 726 South Flower St., Burbank, Calif.



CONCRETE VIBRATORS SINCE 1931



PRODUCE CONCRETE JOISTS, LINTELS AND FENCE POSTS with the KIRK & BLUM HEAVY DUTY VIBRATING TABLE...

Your experience in the building trade should make it easy to build up a profitable business in this new line. The products are simple to make, have unusual strength, are termite proof. The KIRK & BLUM Type "5" Heavy Duty Vibrating Table is capable of multiproduction of concrete joists, allowing a fine profit-margin. Easily produced by unskilled operators. For complete details and prices, write to THE KIRK & BLUM MFG. CO., 3210 Forrer Street, Cincinneti 9. Ohio.



ically on the bag content of the mix. Herbert Jahncke raised the question of cement pricing policy. His company was faced with an increase in the price of cement at the height of the construction season when it was difficult to pass on to the user the increased costs. He suggested that ready-mixed concrete producers confer with cement suppliers to prevent this occurrence.

### **Preventive Maintenance**

(Continued from page 153)

regularly, the full benefits from the use of a high detergent oil are realized, with the contaminants, held in dispersion, being drained out with the oil. The primary function of the oil filter is to act as an auxiliary to efficient lubrication. When serviced properly, the oil filter will be very helpful in removing filterable contaminants from the crankcase oil. The filter traps dirt, sludge and abrasives which might otherwise get into the bearings and other vital parts of the engine. For proper care of the mixer truck engines, readymixed concrete producers should use oils of high detergency in crank cases, and change both oil and filter cartridges at proper intervals.

Regular application is more important than dependence on an exact, quality grade or brand of lubricant.

## SIMPLE!

WE BELIEVE you'll agree that HYDROBLOC is the simplest fully-automatic concrete block machine you've ever seen.

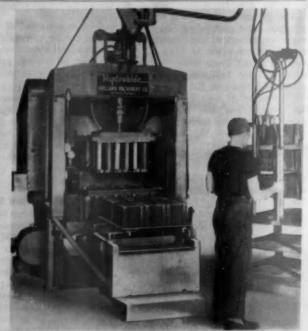
YOU START-STOP the automatic HYDROBLOC with one switch mounted on your offbearer. You make a changeover in minutes to practically any type block. You wash your machine down with a stream of water, with absolutely no damage to the machine.

CAMSHAFT TIMING, as trouble-free and foolproof as the timing of your automobile engine, is the heart of the HYDROBLOC machine. It completely eliminates the need for solenoid valves and all of their delicate electrical controls, and provides the simplest possible means of operating the hydraulic cylinders of the machine. All these controls are enclosed in the dirt-free control panel completely isolated from the rest of the machine.

The HYDROBLOC is low in initial cost, and with its sturdy simplicity throughout, it costs little to maintain. All parts are easy to get at, and you have full protection everywhere from grit and vibration. The simplified attachment setup has minimized replacement cost of the wearing parts of attachments and reduced changeover time to a minimum.

YOU HAVE dual vibration, and a positive height control that requires that blocks all the way across the mold box must be down to proper height before the stripping operation begins. And a lot of features you've often wished you had.

WRITE TODAY for the complete picture story of the HYDROBLOC, or see it in operation at the installation nearest to your plant.



HYDROBLOC'S AUTOMATIC FRONT PALLET RETURN reduces your labor force to the minimum. It comietely cleans and oils each pallet as it is hydraulically moved through the pallet return. There are no troublesome chains, came, came collors, or electrical controls to give out, and the cutire pallet return easily pivots away from the machine for eleanup work.

# HOLLAND MACHINERY CO.

On equipment containing hard alloy bearings, it is certainly true that only premium or heavy duty oil is being used. It is also true that where responsible quality oil is being used, bearing failures are most probably due to such causes as running out of oil, speeding, overloading, improper installation or other forms of abuse and neglect.

One grease lubricant should take care of chassis fittings, wheel bearings, universal joints and water pumps. This grease should be resistive to both heat and water. It should be a lubricant that gives full protection against wear,

rust and corrosion.

For use on truck mixers, manufactured by his company, one service representative comes out flatly for "Lubriplate, Grade 130 AA," (which has a metal base) as a general lubricant that can be used throughout the mixer unit. He highly recommends "Lubriplate's" use on the door seal, main drum bearings and water pumps. He cautions to use this lubricant only where grease, not oil, is used — never in transmissions.

Many high discharge truck mixers have one lubrication application of such importance that it deserves special mention. This is the rubber or neoprene closure seal on the discharge door. On mixers so equipped, wearing of the seal is a most important maintenance problem. This problem is something which cannot be neglected since even one revolution of the drum, on an unprotected seal, covered by yesterday's grout, may ruin it and necessitate an expensive and time consuming replacement.

The closure seal is generally lubricated by means of several high pressure fittings located around the circumference. Grease is forced through these fittings, expelling the grout and furnishing the lubrication for the rubber on steel contact surface. At the least, this lubrication must be done at the close of each day's work and it must be thorough. A power grease gun should be used and the lubricant forced through in liberal fashion with the drum rotating so that all the grout will be displaced by grease. Some operators insist that drivers carry hand guns on their mixer trucks and give the closure seal fittings a shot of grease after each load. Although certain greases are sometimes specifically recommended, it is generally believed that any good, water-resistant chassis lubricant will do the job if lubrication is regular and thorough.

Some mixers are equipped with an automatic device to pump an adjustable amount of grease into seal fittings with each revolution of the drum. Mixer manufacturers, providing these automatic grease guns, report that rec(Continued on page 172)

Noted operators in Ready Mixed Concrete



GOELLNER, HAYDEN,
MAULE, QUILLIAN,
NELCH, SCHILLING
- DOZENS MORE!

Many well-known producers of ready mixed concrete such as Goellner, Hayden, Maule, Nelch, Quillian, Schilling, and numerous others, have all tried the new Rocket, and have voiced their approval with re-orders. Their reasons are plain enough. First, they like Concrete Transport Mixer Company's policy of dealing direct with the customer, enabling him to buy a high-quality, light-weight mixer for considerably less than other makes. Then too, they like the simplified design-no complicated mechanisms to add weight and increase cost. These are the men who attribute much of their success to rugged, dependable equipmentobtainable at exceptionally reasonable prices. Their endorsement is staunch testimonial to the high quality of products manufactured and guaranteed by Concrete Transport Mixer Company.



Deep-Cut Chute for fust discharge.

Hydraulic Chute Control makes the eperator's job much easier, eliminates man-handling entirely!

Standard Industrial Engines truck-type transmission—service available at any automobile repair shop.

Three-Point Suspension cuts friction to minimum.

Wear Points constructed of tough, abrasion-resistant steel!

Operating Controls Grouped for ease of operation, accurately controlled discharge.

Positive Chain Drive delivers flexible power, not affected by road shack, twisting of truck.

Removable Inspection Hatch with leak-proof gasket!

OF DEPENDABILITY



# CONCRETE TRANSPORT MIXER CO.

MAIL	IHI2	COUPON	TODA	T.	į
C	mi	my semilate autor	Ex		ĕ

Gentlemen: Please rush me complete prices, literature, and terms on the following:

	New	Rocket	Revo	gnivle	Drum	Truck Mixor	
3	HI-Lo	Statio	nary	Drum	Truck	Mixer	

| Hi-La Stationary Drum Truck Mixer | Batching Equipment | Plant Mixers | Water Meters

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Name	
Firm	
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4987 FYLER AVE., ST. LOUIS 9, MO. Flanders 2-7800



Made by Williams, this is the broadest selection of fine Cement and Mortar colors on the market. By offering your customers a choice of 23 shades, you can quickly and easily settle upon one having the exact chemical and physical properties your color specification requires.

### CEMENT COLORS BY WILLIAMS

Here you have a choice of 18 shades 6 Reds, 3 Greens, 3 Browns, 3 Yellows, 1 Black, 1 Blue, and 1 Orange. Each shade is manufactured to meet the most exacting specifications for cement work—as recommended by the American Concrete Institute and the Portland Cement Association.

### MORTAN COLORS BY WILLIAMS

Here you have a choice of 5 different shades - one shade in double strength red, light buff, dark buff, chocolate and black. Each of these colors may be used with excellent results with any standard mortar mix or with a ready-made Bricklayer's Cement.



C. K. WILLIAMS & CO.

ords show the operating life of seals, so equipped, has been doubled. Certainly on closure seals, the secret of low maintenance costs lies in effective cleaning and lubricating.

With the exception of special cases (e.g. fluid couplings and torque converters) one carefully selected gear lubricant should efficiently handle all gear lubricating duties. A good gear oil is highly stable even under extreme conditions, oxidation resistive, nonfoaming and remains fluid at low temperatures. A good multi-purpose gear lubricant will be most helpful in simplifying the entire problem of lubricating conventional transmissions, differentials, final drives and enclosed gear boxes on equipment.

Whether a chain drive or a gear drive is used, to rotate the drums of the truck mixers, proper daily lubrication will greatly extend the operating life of the units. Should the gear be allowed to go dry, considerable wear will take place on the gear; the gear and pinion will have to be replaced. On a gear drive, give careful attention to the transmission. On a non-lubricated chain drive, early replacements will be required for the chain and sprockets; without effective lubrication, the chain will stretch and frequent adjustments will be necessary.

In both plant and delivery equipment, don't wait until something starts squealing before you find out where the oil level should be. Proper care in changing oil will aid materially in extending the life of any engine.

All oils, greases and other maintenance supplies should be properly protected against contamination with dirt, water and other foreign substances. Lids should never be left off grease drums, and the measures used to handle oil should be stored in a closed cabinet when not in use. Serious damage can result from dirt and abrasives introduced into equipment through the use of dirty containers.

In any ready-mixed concrete operation, it is a tough job to keep going the year around on an effective greasing program. During slow winter months, effort is made to cut labor costs to the bone. In heavy business months, overtime is constantly watched. During peak demand days, equipment gets rough treatment. Trucks have "got to roll" every day. Don't wreck a lubricating program by unwisely restricting labor hours or eliminating overtime.

One large fleet operator has five maintenance employes, working on trucks and mixers; three mechanics, a mechanic's helper and a greaser. With the plant opening scheduled for 7:00 a.m., the mechanic's helper reports at 6:00 a.m., the first man

on the job. One mechanic reports at 7:00 a.m., with the second arriving at 10:00 a.m. The third mechanic reports at 3:30 p.m., together with the greaser. An attempt is made to work all these men 45 hours per week. On Saturday, one mechanic, the helper and the greaser report. It is significant to note that the greaser's hours are chiefly after deliveries have been completed and on Saturday overtime. Greasing is an off-hours job. The greaser at this plant, checks as he lubricates, making a written report to the mechanics of any repair work to be done.

In your own operation, work out a daily greasing schedule that will produce the desired results. A 9-hr. day, starting at 3:00 p.m. for five days, with Saturday work starting at noon, might become a regular pattern. During the winter season, a 40-hr. week should easily suffice.

Year around, make certain that all pieces of equipment are being regularly lubricated and serviced. Set up a checking program to be carried out each time a mixer truck is lubricated.

Use great care in selecting an efficient greaser. In every conceivable way, make it clearly evident that responsibility for greasing carries top

### N.C.M.A. Research

(Continued from page 152)

the University of Illinois in 1931 but considerable data were also obtained from researches at Ohio State University, the National Bureau of Standards and the Portland Cement Association. With this information it was possible to develop proper working stresses and other design criteria necessary for safe and economical construction, and to correct some of the inequalities of building codes."

The speaker said that since 1945 the block industry, through the N.C.M.A., has been more active in engineering and technical research, but he declared: "its efforts and expenditures are still far too meager and are greatly surpassed by the technical research being conducted by the competition.

"The block industry," he said, "does only a small fraction of the engineering and technical research needed for market insurance. Remember that it is far easier to keep a strong industry strong than to restore a weakened

one," he said.

Mr. Copeland listed a number of new products and developments which he said were all after the concrete masonry market. These, he said, included new clay products techniques, prefabricated houses, precut lumber and plywood, sandwich-type wall panels, tilt-up wall construction, poured

(Continued on page 174)

Model 543 pneumatic tired Bucket Loader. Easily converted for coal or snow.



Model 82-A crawler mounted Bucket Loader. Hydraulically controlled trimmer-conveyor optional.

LOAD the cheapest way.

LOAD from stock pile, bank, or windrow.

LOAD and screen in one operation.

LOAD and strip topsoil in one operation.

LOAD with the most advanced engineering developments in the loading field.

Let us show you how a Barber-Greene Loader can reduce your costs.

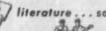
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# Barber-Greene

AURORA, ILLINOIS, U.S.A

WRITE for INFORMATION

descriptive

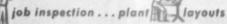




movies



studies ... nearby



## "BIG TIME" ADVANTAGES

IN THIS
COMPACT AND
RELATIVELY
INEXPENSIVE

SUPER BLOCKMAKER



Here is an entirely new semi-automatic machine ideally suited for SMALL and MEDIUM block plants.

A SPECIAL air cylinder-powered press head makes possible a faster cycle and assures blocks of uniform height and equal density regardless of the material used.

PRICED BELOW any machine of comparable performance, the SUPER BLOCKMAKER consistently produces blocks at a rate of 5 per minute from any aggregate and has a peak output of 6 blocks per minute.

Equal delivery of aggregate to the mold box is effected by agitation and mold box vibration assures uniform block density.

A simple push of a button starts cycle during which various operations are automatically handled in sequence.

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foundation walls and cement-asbestos.

"The average manufacturing industry," Mr. Copeland told the N.C.M.A. members, "spends about 2 percent of its gross sales for technical research whereas the block industry spends less than .05 percent or 1/40th as much for this essential function."

John Taheny, president of the Mason Contractors' Association of America, spoke on the subject, "What the M.C.A.A. is Doing to Broaden the Market for Masonry Construction." Mr. Taheny said the primary objectives of his association were the education of members and the promotion of masonry construction.

Henry Toennies, assistant engineer of N.C.M.A. used interesting slides to illustrate his talk on "Block Plant Laboratories." He described the type of equipment, floor space and scope of tests possible with a small, medium and large size laboratory for a concrete block plant. He said a laboratory was desirable as an aid in turning out a more uniform product and to help give the block user better value for his money.

"Promoting your products helps to provide jobs for our members," Thomas F. Murphy, treasurer of the Bricklayers, Masons and Plasterers International Union, told the convention in his talk on "The Mason's Trade — An Art and a Profession."

Interesting colored slides of scores of concrete masonry building projects and plant operations in Europe were shown to N.C.M.A. members by Gilbert E. Olson, president of the International Precast Concrete Manufacturers. The pictures were shown in connection with Mr. Olson's report of the International Congress of Precast Concrete held in Brussels, Belgium, last June.

The final speaker on the N.C.M.A. program was Charles E. Harbaugh, director of sales promotion, United States Chamber of Commerce. He spoke on "The Value of Belonging to a Trade Association."

## SMOOTH DELIVERY increases net production



OSWALT Shock - Free Block Ejector and Front - End Pallet Feeder provides new high efficiency for Vibrapac owners in the operation of their machines.

It removes the block as gently as if lifted by hand . . . increasing the production of perfect blocks. Unequalled in smoothness of operation, as well as economy and durability.

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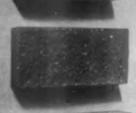
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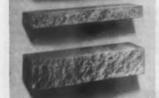
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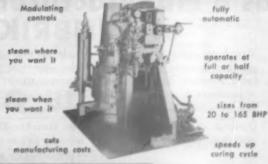
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CONCRETE PRODUCTS, March, 1955
A Section of ROCK PRODUCTS

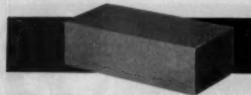
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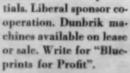
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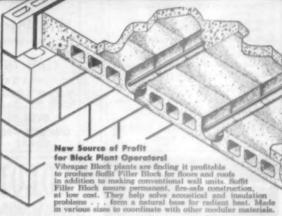
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# Columbia's 12" HIGH

THE ONE

MACHINE

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EQUIPMENT SERVES COLUMBIA MACHINES BEST!

Engineered to maintain high production of top quality block, Columbia accessories and plant equipment are geared to handle the output of Columbia machines.



CLEANER AND OILER

This unit, placed ahead of the regular pallet feeder magazine, keeps it supplied with well-cleaned, uniformly oiled pallets.



Designed to permit low headroom, this offbear-er has great lifting power, is simply constructed and built for fast operation.

Columbia also makes automatic and semi-automatic block splitters, batch mixers, skip loaders, and 2 and 3-block machines.



**INCH HIGH** Drain tile, partition blocks, flue liners, silo staves, Roman tile, water meter boxes, other special shapes. Only 12"-high machine on market.

-INCH HIGH Standard and special concrete blocks in all shapes. More than 250 molds are available for the Columbia machine. Consult us about your special requirements.

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Columbia service adds extra value to your machine! Expert assistance on tap from nine service representatives throughout the country.

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ON THE

# THE NEW TRAVEL BATCHER

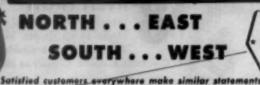
The TRAVEL BATCHER can travel behind a truck with complete safety without Hi-way violation. On arriving at a destination, average set-up time is ten minutes.

Batch mixture is maintained uniformly with accurate scales mounted on the machine. The capacity of the TRAVEL BATCHER is 60 yards an hour delivered into mixer trucks.

By bringing the batch plant closer to the job, it reduces the number of truck mixers needed by as much as 83%.

Maintenance bills, long a headache of every readymix concrete operator, are reduced to a minimum.

The TRAVEL BATCHER offers the performance of a stationary batch plant, plus the convenience of mobility.



JOHN L. SAVAGE

"I have used several types of batchers . . . I've even made my own . . . but my new 'On the Job TRAVEL BATCHER' can accurately outproduce any other portable batch plant . . . because of its mobility I am getting jobs that I had to give up before . . . I plan on getting another TRAVEL BATCHER in the spring . . . "

JOHN L. SAVAGE

TRAVEL BATCHER

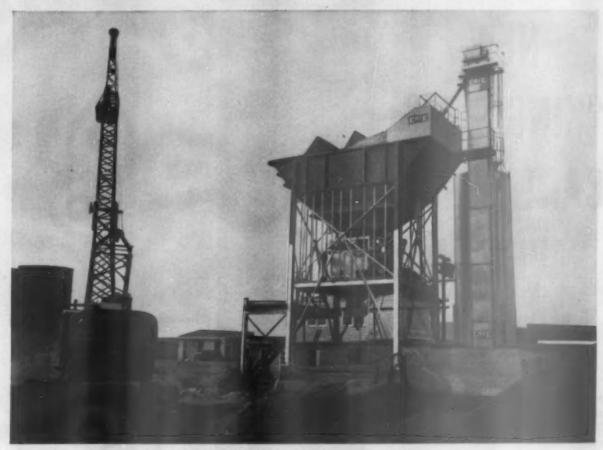
Por additional information write, wire or phone:
SOUTHEAST READY-MIX - 6490 HOLLADAY SOULEVARD - SALT LAKE CITY, UTAH

The hopper, with a capacity of 8 yards can be recharged with either a dump truck or a front-end loader.





# SILLIMAN & GODFREY, BRIDGEPORT, CUTS LOADING TIME WITH ERIE STRAYER TRUCK MIXER PLANT



Silliman & Godfrey's Erie Strayer installation consists of a four compartment bin, precision weighing AggreMeter and cement silo. Plant has a 211 ton capacity. Sold by Holmes-Talcott Co., Hartford. Other Erie Truck Mizer Plants are available in 2, 3, and 4-bin sizes, in capacities from 78 tons.

SILLIMAN & GODFREY provide specification concrete to building and road contractors in the Bridgeport, Conn. area. Fifteen truck mixers, each carrying 10 yards of mix, are used to maintain fast service to their many customers.

Checking his equipment, new owner, George McCarthy, found that it required about 20 minutes to load a single truck mixer. Not satisfied, he investigated better and faster means of doing the job, then bought an Erie Strayer Truck Mixer Plant.

Here's the result—the concrete evidence that Erie Strayer equipment does the job better—faster. Today, Silliman & Godfrey trucks load 10 cubic yards of specification concrete in 4 to 4½ minutes—well over 400% faster than before. That means more deliveries, increased profits, and customers who are not irked by time lost waiting for the truck to arrive.

Erie Strayer Truck Mixer Plants work just as well in Alabama or California as they do in Connecticut. Made for the smaller operator—or the one who moves from place to place—they offer the same proven features that have won coast to coast acceptance for Erie Strayer's big batch Plant Mixers.

ROCK PRODUCTS, March, 1955

#### CHECK THESE 3 GOOD REASONS WHY THE ERIE PORTABLE IS A "BEST BUY".

- 1. One-man operation provides efficient, prefitable production.
- Welded sections. Can be assembled in eight hours. Knocks down just as fast into parts that will move over the highway anytime, without special permit.
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For literature, write Dept. P35 Cable Address: EXIMPORT

#### ERIE STRAYER COMPANY



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# NEW "KING-SIZE" CARTRIDGES SAVE TIME AND LABOR

Now, Hercules produces "King-Size" cartridges in lengths of 24, 20, 16 and 12 inches, and in diameters of 1¼, 1½, 1¾, and 2 inches.

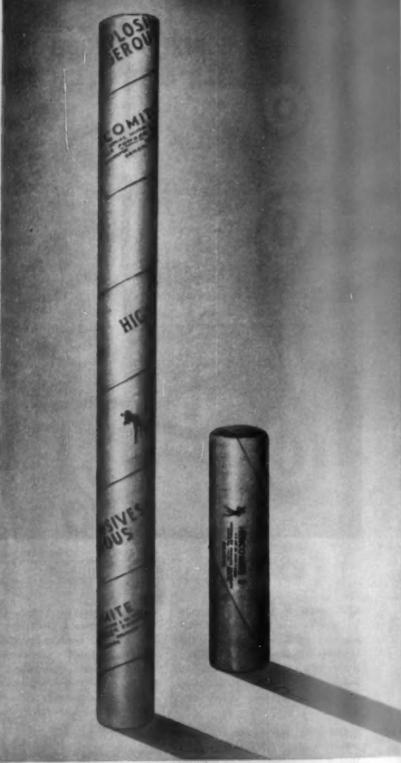
Available in all types of Hercules® dynamite, these long-length, small-diameter cartridges are now in full production.

"King-Size" cartridges make possible a more uniform fragmentation through the discharge of a single column of explosive. Their use means substantial savings in valuable time and labor in loading holes.

Hercules designed, tested, and installed special new packing machines for these "King-Size" cartridges.

Our technical service and sales representatives will be glad to discuss with you how these "King-Size" cartridges can go to work for you.

HERCULES



THREE TIMES AS LONG ... Here is one of the new "King-Size" Hercules cartridges-24 inches in length, shown alongside the same grade in the conventional 8 inch size.

#### HERCULES POWDER COMPANY

Explosives Department, 946 King St., Wilmington, Del.



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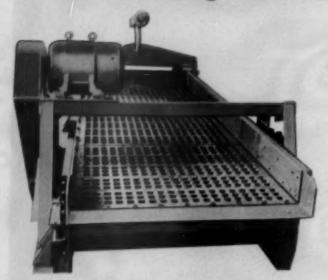
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QUAKER PIONEER RUBBER MILLS

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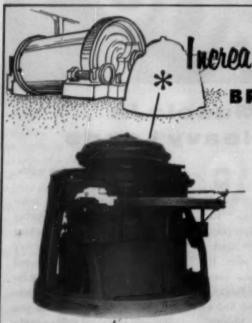


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nereased CEMENT PRODUCTION ADLEY HERCULES MILLS

> The quickest, most economical way to increase your grinding capacity

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For complete information, write for Catalog No. 57 -

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Rounded exclusive Power-Dome com-bustion chamber has less surface area than irregular chambers. Thus less heat is dissipated into cooling system, more heat is utilized within the chamber to expand gases more fully, give greater thrust to piston.

Dodge avoids powerstealing hot spots

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With Power-Dome combustion chambers, the spark plugs are located at or near the center. Thus the flame has a shorter distance to travel, combustion is more even. Large unrestricted valves mean better "breath-

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Power-Dome combustion chambers are rounded, have

from carbon "hot spots

no corners or pockets in which carbon deposits can build up. Such deposits become red-hot, pre-ignite the fuel-air mixture, cause engine knock and loss of power, lead to costly repairs.

How you get more power, use less gas with

POWER-DOME V-8 truck engines!



Truck owners everywhere report more power and less fuel consumption with new Dodge Truck Power-Dome V-8 engines. AAA-supervised tests proved the power of Dodge Truck V-8's in a history-making Pikes Peak climb . . . proved the economy of Dodge Truck V-8's in a sensational 22-mile-per-gallon Economy Run.

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16 New 16 Fast 16 Versatile!

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AC or DC WELDING ELECTRODES

111/2 to 13% MANGANESE NICKEL STEEL



Bucket teeth built up with "Manga-Kote" and then hard-faced with "Resiste-Lay".

Has all the advantages of tough, ductile manganese nickel steel weld deposits, yet runs as easily as mild steel electrodes.

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on Cement, Lime and Dolomite Kilns

RAYMOND Bowl Mills are pulverizing more than 121/2 million tons of coal annually for direct firing applications on cement, lime and dolomite kilns, and industrial furnaces.

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CHICAGO 22, ILLINOIS

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for fast "secondary breakage"



Use FREDERICK CAST semi-steel BALLS with E-Z Swing Steel Eye

Tough and rugged, Frederick Wrecking Balls deliver crushing power where you need it. They're made to stand abuse—to give you long, economical service. Inverted steel eye gives cable protection plus free-swinging action. Special release hooks for free dropping also available. Shipmenta made promptly from stock of these sizes: 500 lbs., 1000 lbs., 1500 lbs., 2000 lbs., 6500 lbs., 6500 lbs., 6000 lbs., 6000 lbs., 6000 lbs., 6000 lbs., 6000 lbs.

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All six styles pictured above are readily available in malleable iron or Promal for mounting on either belt or chain. Aluminum and bronze can be furnished for special applications. Book 2465 gives complete ordering information, including sizes carried in stock. Ask your nearby Link-Belt office or distributor for a copy, or return the coupon below.

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	(or your nearest Link-Belt office)
	Please send me a copy of Book 2465, "Link-Belt Cast Elevator Buckets."
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BONDED HEAVY DUTY VIBRATING SCREENS "For continuous, economical screening of high tonnages"





For all minerals, chemicals and industrial products. To size, grade, clean and separate solida from Hausda. Heavy duty models are 4-bearing, positive throw escentric shaft type, 2' x 2' to 5' x 14', 1 to 5 deaks. Other models have escentric weight mechanism, spring mounted; 1 to 3 deaks; from 3' x 4' to 3' x 5'. All models low priced, with minimum maintenance and power

General Purpose prices from ......\$895.00

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Complete Ready-Fab sections quickly and saily joined together on the job. We take ar loss on our stock of short length belting. Ou can save as much as 50% on the BONDED ON VEYOR SPECIALS listed, with conveyor elting in two pieses. Conveyors are squipped with 5" roll diam. idlers and return rolls, 20" iam. head pulley and 16" diam. tall palley sounted on 2½" or 2½" diam. shaft. Belt is sw 4-ply, 25 os. check. ½" top rubber cover x /82" bottom cover and le fresh ctock made by sading manufacturers.



		BELTING	
Belt Width	Length of Conveyor	List Price	Sale Price
16"	20'	\$ 991	\$ 548
16"	45'	1785	937
18"	25'	1229	684
18"	45'	1839	1005
18"	85	3209	1665
18"	100	3704	1912
24"	25'	1322	773
24"	45'	2062	1145
24"	100'	4097	2166
24"	180'	5207	2773
80"	25'	1421	847
80"	65'	3101	1718

#### LONGER LENGTHS WITH EXTRA FEATURES

In addition to features described above, these conveyors include Gravity Takeup, Lagged Head Pulley, Self Cluaning Wing Tail Pulley, Head Shaft and Bearings 2-15/16". Tail Shaft and Bearings 2-16/16". Tail Shaft and Bearings 2-7/16". Side Guide Idlers-(1 pr. each for Head and Tail. Snub Roll at Head end 12%" diam. using 1-15/16" shaft and bearings. Ratchet and Pawl Holdback. Beturn helt cover at slight extra cost.

Balt	Longth of	Lint	Sale
Width	Conveyor	Price	Price
18"	150'	\$ 6209	\$3507
18"	200'	7859	4336
18"	250'	9509	5164
18"	300'	11159	5993
24"	150'	6820	3949
24"	225'	9595	5356
24"	300'	12370	6763
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80"	220'	10604	5971
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Other lengths and belt widths at bargain

#### NEW CONVEYOR BELTING **5AVE 28%**

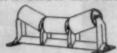
Heavy duty 4-ply, 28 os. duck, ½ top rubber cover x 1/83° bettom cover rubber belting having high tensile strength, tough cotton duck, strong carcase and proper flexibility. For heavy boxes, bags and bulk materials. Troughe easily, Famous brands at deep out prices. Fresh stock.



Width	List Price	Sale Price
16"	\$3.64 foot	\$2.62 foot
18"	4.03 foot	2.90 foot
24"	5.23 foot	3.76 foot
30"	6.39 foot	4.60 foot

Additional widths and plies available at low prices. Write for free sample.

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3-roll,	5" dia.	Troug	hing	Idlers	for
16"	helt 1	117.25	20"	helt	\$19 S

18" belt. 18.00 36" belt. 20.25 24" belt. 18.75 48" belt. 21.75

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All steel. Interchangeable with other well-known makes. Replaceable ball bearings. Either sealed type (pre-lubricated) or with alemite fittings. Rute proof ball races. Main-tenance is negligible.

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- Raymond High Side Mills 3 and 5 roll.

  -Pennsylvania Model SXR-100, 100 Tons per hour.

  -Raymond #1 Pulverizers with 6' whis-

- zers. Hardinge 43½'x18", 8'x22", 6'x22", 6'z 43", 10'x48". -Patterson 6'x8' Ball Mills.

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- 8—Allis Chalmers 19" Superior McCully Crushers, V-helt drive.
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   19—Jaw Crushers 5"x6" to 48"x48".

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- 6—Tyler Hummer Screens 3'π5', 4'π5', 4'π7',
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#### CRUSHERS

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10'6"x112'x%" Traylor. 9'x80'x%" Allis Chalmers. 8'x150' Vulcan. 8'x125'x%

8'x125'x%". 6'4"x45'x%" welded, UNUSED. 5'6"x25'x%" Allis Chalmers.

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4'x42' brick lined. 4'x20' welded, brick lined.

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\$10-16 Roto-Louvre. 604-24 Roto-Louvre.

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DRYER: Double shell, 0' dis. x 65 ft., with all

BLACK TOP PLANT: 1% ton mixer, bins, elevator,

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Buerrus Brie 110-B. 6 rd. rock dipper.
Buerrus Brie 110-B. 6 rd. rock dipper.
Buerrus Brie 110-B. 6 rd. rock dipper.
3 place. 00 crock. 2100/2000 volt.

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16, 304 H.P., 225 RPM, 2300 volt. synchronous
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H.P., 440 volt. 3 phase. 00 crols.

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OTTERED ELECTRIC CRANES: Whiting 8 ion, 54' span, 4 motor, clasm shall businet operating, 449 volt. 2 phase, 96 opte, flowers other crane both AC and DC, various spans, 5 tons to 55 tone, 3 and 4 motor.

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Ton Brownhoist Steam Locomotive Crane, 150 H.P. Vulcan Size No. 72 single drum

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1-22"x14" Sturtevent Roll. 4-26"x15" Sturtevent Roll. 2-32" x 36" Edison Rolls. 3-36" x 36" Edison Rolls.

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A TD-14 Bulldozer, Heil Angle blade and D.D.P.C.U. and a 1949 Fruehauf 20 ton low boy. Both in good condi-tion. Would trade for Northwestern Model 25 Drag Line.

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Vill fit L820 or L82 Lorain machines. Boom is 70 ft. and complete with fairleader, two drum laggings and dragline gantry ex-tension. Never been used. Priced for quick

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Chicago 6, III.

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RP-3

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BOX N-3. ROCK PRODUCTS 309 W. Jackson Blvd., Chicago 6

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#### WANT

#### EXPERIENCED MAINTENANCE MAN

We need an A-1 mechanic of proven ability in maintaining all machinery used in limestone quarrying. Year round employment. Quarry located in Central Illinois. Write giving full experience, age and availability.

**BOX N-8, ROCK PRODUCTS** 

309 W. Jockson Blvd., Chicago 6, III.

#### ASSISTANT CHIEF CHEMIST

Needed for single-plant cement company located in Northeastern U. S. Prefer applicants under 40 years of age. Qualifications should be sufficient to assume position of Chief Chemist within a reasonable time. Replies, which will be kept confidential, should include details on experience, training, age and other pertinent data. Our employees know of this advertisement.

**BOX M-93, ROCK PRODUCTS** 309 W. Jackson Blvd., Chicago 6, III.

QUARRY OPERATORS—AGGREGATE PRODUCERS!! Experienced producer of all types of material; consistent drilling and blasting record in traprock, granite, sandatone, limentone and dolomite with high ratio of rock recovery to dynamice used and proper fragmentation—using wagon, well or rotary drill routines—seeks connection medium to large stationary quarry or turnpike contractor with heavy tonnage. Straight salary basis or make me prove my shility to produce on a cost or tonnage renumeration. Excellent commercial references, multi plant experience, married, perfect health, 53 years of age, available immediately for any U. S. location, willing to qualify in person any major project. BOX N-11, ROCK PRODUCTS, 309 W. Jackson Blvd., Chicago 6, Illinois.

EXECUTIVE ENGINEER 39, Married, strong background in administration and engineering in the rock products industry, with excellent record of achievements. Experienced in all phases of the manufacture of Portland Coment and non-metallic mineral mining and processing. Now employed, but desire to change to a growing company who can use to the full extent the qualifications possessed. Minimum salary requirement in the five figure range, depending on responsibility and location. BOX M-88, ROCK PRODUCTS, 399 W. Jackson Blvd., Chicago 6.

#### Wanted Machinery or Plant

Including Rotary Kline, Direct Heat Dry-ers, Pulverisors, Crushers, Ball Mills, Vi-brating Screens, Power Shovels and Cranes, Bucket Elevators, Conveyors, Filters, Diesel

P. O. BOX 1351, Church Str. Stn. New York B, N. Y.

#### WANTED

Good used Sauerman slackline excavator, complete with mast, hoist, bucket, etc. 200' range, 2 or 3 yard capacity.

BOX M-01, ROCK PRODUCTS 300 W. Jackson Blvd., Chicago 6, Ill.

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M. K. FRANK, 400 Loxington Ave., New York City Park Soliding, Pittsburgh, Penna. 195 Lake St., Rose, Nevada—Phone

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POSITION WANTED—Have had 21 years' experience in production of crushed limestone all with one large company, serving 15 years as superintendent and general superintendent. Experienced in all phases of production, he best open quarrying and underground mining operations, and in labor relations and all phases of production. Desire position as general superintendent or manager with producer of agregates, portland cement, line or related operations which can utilize my many years of operations which can utilize my many years of operating experience. Seek position that offers opportunity commensurate with performance. May also consider position with machinery supplier for these industries. Ags 28, married, 5 children, Available immediately. SOX N-1. ROCK PRODUCTS, 369 W. Jackson Blvd. Chicago 5, Illinois.

Supt. or Management Position Wanted. 28 years experience in the sagregate dustry. Have worked all types deposits, gra el-sand-quarry, etc. Operated large and small plants—crews from 250 men on down. Have had to meet all types spec. Have also handled design and construction of gravel and crush rock plants, conveying systems, opening new quarries and pits. Also familiar with sales, cost accounting and ready-mix operations. Location no objection. Will be glad to contact for personal interview. References furnished for above period. BOX N-4, ROCK PRODUCTS, 309 W. Jackson Blvd., Chicago 6, Ill.

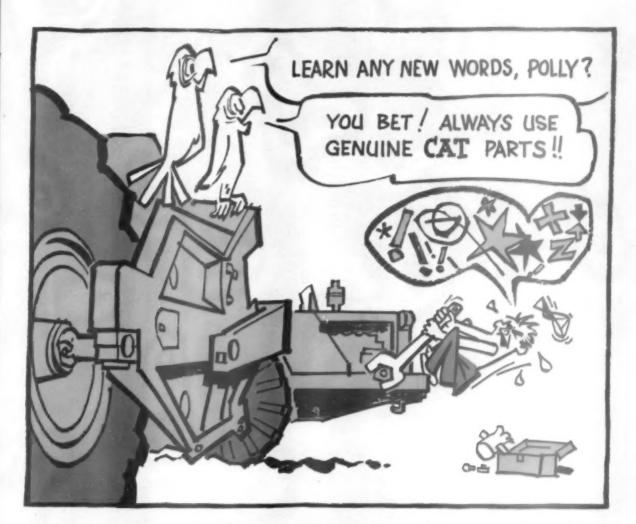


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